Management Accounting
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Lec 33 Material Variances II

Welcome students, so we are in the process of learning about the standard costing and we have solving the problems now in the previous class I solved 2 out of the 4 problems given in the sheet here, problem sheet here. First one was very simple that we have to calculate the only 3 variances. From a means a single input and a single output and in the second case we also calculated again the 3 variances but the input was multiple that is 3 product A, B, and C to get the say final output that is a one product and now I will deal with the third and the fourth problem today because they say as encounter with different type of the situation, different type of the problem.

Here, we will calculate all the 5 variances that is material price, then cost, usage, mix, and the yield variance and we will adjust the issue of the wastages also and then we will try to find out that if there is a some standard wastage because as I told you that comparing the input with the output we can find out say we have given the three units of the input you can expect the 1 unit of the output.

So, it means there is a wastage which is expected wastage, normal wastage, during the process and we have to adjust for that and then we will have to calculate the variances so it means in the standard itself the wastage adjustment is given that output of total units we are giving the input we are giving how much is the percentage of the wastage. It may be 10 percent, 15 percent, 20 percent. So, this will be the wastage. So, you can accordingly expect the output.

That if you get the 3 units and say 33.3 percent is the wastage so you can expect output will be 2 units. So accordingly we have to find out what is the wastage and whatever is given to us the percentage predecided percentage of the wastage we have to means adjust that wastage and after that we will see that even after providing the allowances for the wastage there should not be any variance. Once, we have already adjusted for it then despite that, there is a variance then say the issue to be looked into, the matter to be looked into and the matter to be resolved right.

So, in this situation what we will have to do here is that we will have to say adjust the wastage or address the issue of the wastage and then we will have to calculate the variances right. So, for example in this third problem, it is given here as:

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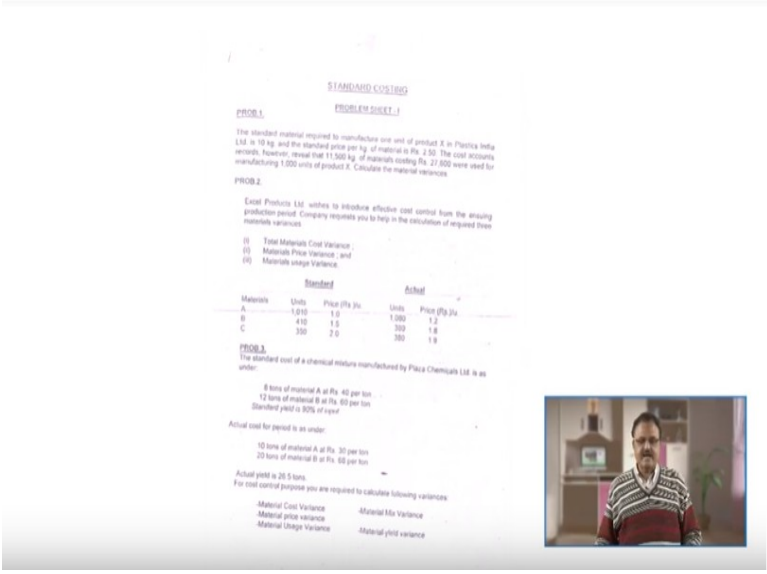

The standard cost of a chemical mixture manufactured by Plaza Chemicals Ltd. is as under. 8 tonnes of material A at rupees 40 per tonne and 12 tonnes of material B at 60 per tones right this is the standard cost and the standard yield is 90 percent of the output. So, you can say that from the given input 90 percent will be the output and 10 percent is the wastage which is known in advance and we have already adjusted the standards and we know it that is the wastage of the input is up to 10 percent then it is permissible. No issue but if it is more than that then it is a serious cause of concern.

Similarly, we are given here as the actual cost for the period is as under: 10 tonnes of material A at rupees 30 per tonnes and the 20 tonnes of material B at rupees 68 per tonnes and the actual yield is how much 26.5 tones. Actual yield is 26.5 tonnes. So it means the basic difference you can find out in the information given about the actual and the standard cost. Standard we are working out at the level of 20 units where we have given the input of 8 units of product A and 12 units of the product B and actual is 30 total 10 and 20. So it does not make any difference. It can be any amount in case of the actual once we must know the output and say the percentage of the wastage, then there should not be any issue, there should not be any problem.

So, we can upscale the standard say in the light of the actual information and currently, the standard is for 20 years of input and actual is 30 years of input so we can say that what is the output expected from the 20 units that is 90 percent. Similarly, how much is the output expected from the 30 units again 90 percent. So it means you can find out say from the 20 units the output expected is how much that is 18 units and from the 30 units, the output expected is 27 units. But, the actual output here has come up is actual yield is 26.5 tonnes. It means it is more than the expected level of the wastage and the output after adjusting the wastage is expected as 27 units but here we have found is that the actual yield is 26.5 tonnes of 26.5 units. So, for the control purpose, we have to calculate certain variances.

So, that we can find out how much difference is there how much variance is there and what is the reason for that variance, what are the causes for those variances and whether they were controllable or uncontrollable and take the actions accordingly right. So, now we will solve this problem by adjusting the issue of the say wastages and then we will be clear about that if this situation arises where some wastages from the input are expected in that case how we calculate the variances right. So, in this case, we will start with the first variance and that variance is the material cost variance. This is material cost variance MCV.

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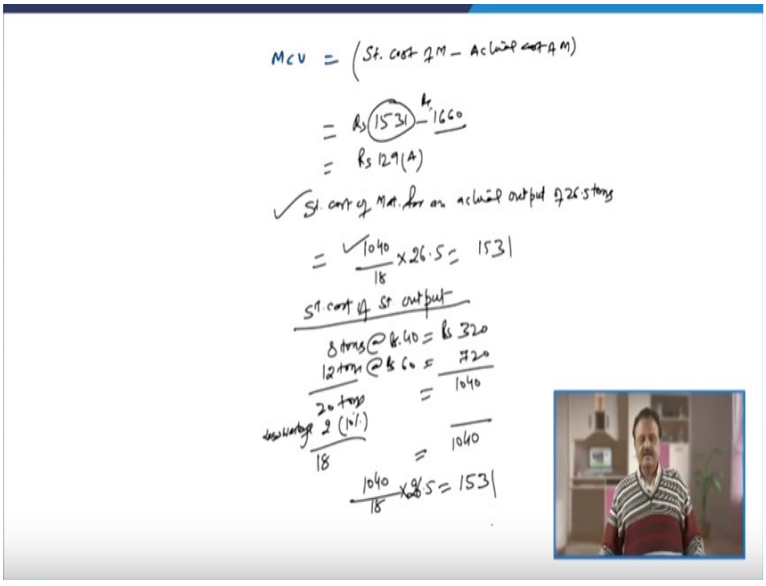

So, if you calculate this material cost variance we know that the formula for calculating this variance is what that is the standard cost of the material - actual cost of material. So, it means

now we are given the standard information for 20 tonnes of input, actual is the 30 tonnes of input. So, what we have to do here is. We have to revise the standard right. We have to revise the standard so because you cannot compare 20 with 30 or 30 with 20 this is not possible. If you bring down 30 to 20 or you scale up 20 to 30, so bringing down the actual against the standard is not possible. So, you have to upscale the standard with the actual and then we have to provide the allowance for the wastages and for the given percentage and then calculate the material cost variance.

So, it means, in this case, what we have to calculate, what we require is standard cost of material, standard cost of material – actual cost of material. Actual cost of material. So this is the formula available with us. So, now what is the standard cost of material? We have to find out the standard cost of the material and then we have to find out the actual cost of the material also. So actual cost of material, finding the actual cost of material should not be a problem because we are already given. We have used how much? 10 tonnes of at the rate of 30 per tonnes and 20 tonnes at the rate of 68 per tonnes price. So that is given to us and we can easily work out what is going to be the total actual cost.

If you calculate the total actual cost you can easily find out but let us first calculate the what is the standard cost and standard cost for the input of the 30 tonnes. So, it means in this case if you calculate the standard cost of the standard so what we are saying. If I give you this number. This number is 1531 minus what is the actual cost of the material. If you calculate the actual cost of the material this will work out as 1660. So this is higher again you can say this is rupees and this is also rupees. So this variance will come out as how much? This material cost variance will come out as rupees 129 adverse. 129 adverse

Now, you must be wondering that how I have calculated this 1531 and this is very clear to you that how this figure will come up. So, let us understand how I have calculated this 1531 as the standard cost looking at the actual information given in the standards. So, we have to calculate now the. What we have to do here is that you have to revise the standard because actual input if you go straightway from 10 or 20 to 30, you expect that the actual say output or the yield should be how many that is 30 – 10 percent is 3. It should be 27 units but it has come up as 26.5. So, it means you upscale the standard in the light of the actual output and actual output is not 27 units. Actual output is 26.5 units.

So, we will see that the standard will be revised but it will remain little less as compared to the 27 units of the output. So first understand how that we calculate this, total requirement of the material and the standard cost. So, how I have done this 1531, that is standard cost, standard cost of material for an actual output, for an actual output of how many 26.5 tonnes right. That is going to be how much. That is equal to. I am saying it is 1531. How it is? We have done it something like this. Say for example, what is the current information given?

Standard cost of the standard output if you calculate the standard cost of the standard output, standard cost of, first we calculate the standard cost of the material for actual output of the 26.5 tonnes, now I have calculated this 1531. How I have done this? That is 1040 divided by 18 and multiplied by how much. What is the actual yield, actual output, 26.5 tonnes? So, if you solve this. This works out as 1531.

So, now this is the 1040 how we have arrived at 1040. So, you can find out it as that the standard cost of, standard cost of standard output, standard cost of standard output, standard cost of standard output is how much? 8 tonnes at the rate of rupees how much. It is given to us is 40. 8 tonnes at the rate of rupees 40. This works out as rupees 320 and second is the 12 tonnes at the rate of how much?

It is given to us this information is given to us in the case that is the 12 tonnes of the material B at the rate of how much. This is at the rate of rupees 60. So, standard cost of standard output we are calculating so 8 tonnes at the rate of 40 which is given to us. So the total amount works out as the for the A what is the product given here that is the material A. So material A is 8 tonnes at the rate of 40 that is 320 and material B at the 12 tonnes at the rate of how much 60, so this works out as how much 720 right.

So this total is how much? This is 1040 and for how many tonnes. It is 20 tonnes right that is equal to 1040. Now, in this case, we are given already that what is the wastage. Less wastage. You write here. Less wastage. So, how much wastage is given here that is 2? You can put in the bracket that is 10 percent.

So, finally, this cost of 1040 is for how many units. That is for. You can expect the output finally you can say that is the what we are working out here is standard cost of the standard output. So, you put you will be able to find out. By giving the input of 20 tonnes the output will be 18 tonnes

after adjusting the wastage of 10% that is 2 units. So, this cost will work out as how much that is 1040, 1040. So, I have calculated what standard cost of material for actual output of 26.5 tonnes.

So you can easily calculate it that is 1040 divided by 18 and multiplied by what is the actual this is standard and what is actual, 26.5 is actual. So, we are revising the standard in the light of the actual output and this will work out as how much. You will take it as 1040 divided by 18 into 26.5 that works out to be 1531, that is how I have taken it as 1531. This is 1531 I have taken this way. I have calculated this way. So what you have to do is.

You have to adjust the number one, two things are there in this case. Number one is, one thing is to adjust the issue of the wastages at the rate of 10 percent and second thing we have to do here is we have to upscale the standard because the standard is for 20 units level and actual is at the 30 units level. So, first you have to upscale 20 up to 30 and then you have to adjust the issues of the wastages and try to find out and when we do it even without doing anything it is such a simple case, you can find out that when you give an input of 20 units your output expected is 18 units and if you give the input of 30 units your output expected is 27 units but since it was 26.5 it was very much required to readjust the standard in the light of actual output and now there should not be any variance once we have revised the standard.

So, in this case once you have calculated now the standard cost, we have the standard cost of the standard material is 1531 and the actual cost of material is, standard cost of material is 1531, actual cost of the material is 1660 so the variance we have calculated here is that is 129 is the adverse or the unfavorable variance because standard cost expected was less. Actual cost is more so it means there is a negative variance of 129 is called as unfavorable or which is called as adverse.

Now, we will calculate the say next variance and the next variance is for say you can call it as for what, this is the material price variance. We will calculate the material price variance.

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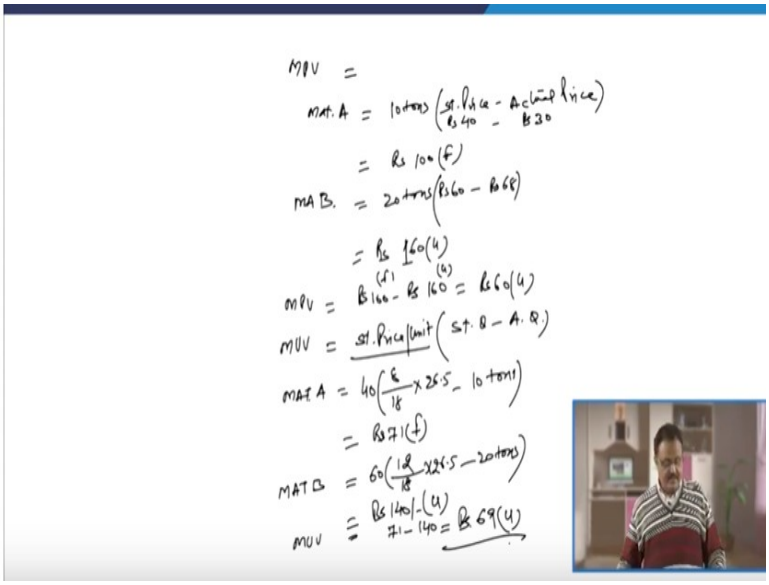

So, what is the material price variance? What is the formula? Material price variance, the formula we can use here is that is the actual usage or the actual quantity into standard price per unit – actual price per unit. So, we will take it for the material A, this is how much, what is the actual quantity, actual quantity for the material A we have to take is 10 units or 10 tonnes into standard price – actual price. Standard price per unit means it is obvious, standard price per unit – actual price per unit. It is very simple.

No adjustment is required to be done because we are taking the actual quantity so actual quantity is the actual quantity, there is no need to adjust anything and the prices are also not going to change. So, if you do this, it is the 10 tonnes you can call it as material A. So, what is now the standard price? If you take the standard price this works out as how much? Rupees 40 and what is here, actual price is rupees 30 so, it means what is now the variance. If you see its variance for the material A, this works out as how much. This is the 400 – 300, this works out as 100 favorable, 100 favorable, this is F.

Similarly, you can calculate for the material B. If you calculate for the material B, how much it comes up as 20 tonnes is the actual quantity out of 30, standard price is how much, standard price is now, we are given rupees 60 – rupees 68, rupees 60 – 68, that is working as how much

that is rupees 160 that is how much it is 1200 and then it is 20 into 68 so total if you solve it, it will work out as that is 160 unfavorable 160 unfavorable.

So these are the variances for the material price variance that is the for the material A is 100 and for the material, B is 160. So, finally, the material price variance is coming up as how much rupees 100 – rupees 160, rupees 100 is favorable and 160 is how much unfavorable. So, this final variance will come up as how much. This will be coming up as, this is one is favorable, another is unfavorable, so I have put here F and I will put here as U, favorable and unfavorable variance.

So, if you calculate this that is 160 is the total that we have calculated that is the for the material B so, if A –B is you take then you will find out as or A + B, normally you should take the A + B, one is favorable, another is the negative or the adverse variance. So, finally, the material price variance is how much rupees 60 this unfavorable because unfavorable is more than the favorable so the net result is 60 unfavorable which you call as the material price variance and this is the second variance we had to calculate, so we did it.

Now we will be going for the third variance which is called as the material usage variance. This is MUV, material usage variance, this is the MUV, so for calculating the material usage variance, we will have now to deal with the again the same situation because in case of the material usage variance what is the formula? Formula is standard price per unit into standard quantity – actual quantity right.

So, now we have the standard price per unit that is not the problem in the case of both the inputs that is A and B but there is a difference in the standard quantity and the actual quantity. So again you have to revise the standard because the standard you are given for 20 units and actual is given for 30 units. So, if there is no issue of the wastage is, you can easily upscale the 20 equal to 30 but here are the issues of the wastages because finally the output of the 30 is not 27, it is 26.5, so to deal with that issue you have to upscale or revise the standard quantity but not in isolation but in the light of the actual output.

So, we will have to revise the standard first for both the materials A and B and actual is already given to us and then we will have to calculate this variance. So, in this case, how would you calculate is that is for the material A, material A, standard price per unit is how much, standard price per unit given to us here, in this case, is that is rupees 40, standard price again you can

check here in the sheet standard price is rupees 40 for the A and 60 for the B. So, it is going to be how much.

This is going to be 40 into standard quantity is how much, standard quantity you have to upscale, it is 8 by 18 into 26.5. So, if you take this amount this will work out as 8 divided 18 and 26.5. So, this will come out as how much it turns we will see that how much it works out and what is actual, actual is 10 tonnes because out of 30 A's proportion is 10 tonnes, so it means 8 by 18 into 26.5 that is 10 tonnes. So, if you calculate this variance finally, this will come up as how much. If you solve this equation it will come up as rupees 71 unfavorable. Rupees 71 unfavorable for the material A and similarly now you have to calculate it for the material B.

So, for the material B will be coming up as material B will be how much the standard rate is how much standard rate is, standard rate we are given here is that it is rupees 60 into we have to take the second component 12 and what is the say total it is 18 because our actual output is 18 sorry actual output is 26.5 but from the standard it was 18, so 12 by 18, it is not 12 by 20, it should be 12 by 18 because we are revising the standard in the light of the actual output.

So, it is 26.5 and minus how much it is going to be 12 by 18 into 26.5 tonnes minus what is the actual, we will see the actual quantity here, then actual quantity here is how much it is 20 tonnes. Actual quantity is 20 tonnes. So, this is the actual quantity and finally, if you calculate this variance this variance works out as for the say material B this is if you solve this it will work out as 140 and finally it is going to be U that is unfavorable.

So, you can easily find out what is now the material usage variance. This is going to be 71 and second thing is going to be how much 71 – 140. So, this will come up as 71 is one and second one we are going to take is that is one sorry I would like to make one correction here for your reference here the correction is that this variance is sorry if you calculate this variance will come up as favorable.

This is the favorable variance. So, if you take this variance, this is favorable and then next is that is the rupees 140 is the unfavorable so finally we are going to have that is the material usage variance is that is A – B so material A variance is the usage variance is one, sorry for the material A material usage variance is 71 and for the material B the variance is 140 unfavorable. So, finally, the MUV is how much that is rupees 169 sorry not 169 only 69, 69 unfavorable right.

So, these are the 3 variances we could calculate till now. The material cost variance, material price variance, and the material usage variance from the given information and now we will go for the next two variances that is the material mix variance and the material yield variance right.

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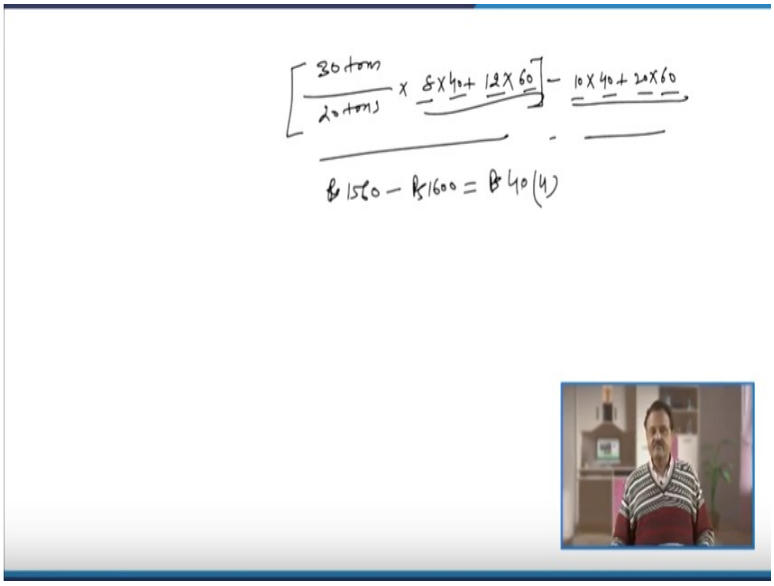

So in case of the material mix variance, you do not need to do anything. Only you have to use the standard formula given to you. I have given you the 3 formulas. You have to use, you have to find out first of all whichever is usable in this situation in this case and if you look at the information given in the case. The information given in the case is that what is the total weight of the standard mix, total weight of the actual mix and total weight of the standard mix.

So, what is the formula here? Formula here is because two weights are different. Standard weight is different, actual weight is different. Standard weight is for the 20 tonnes and actual weight is for the 30 tonnes. So, when 2 weights are different so it means it is very clear that the third formula will be used.

Third case will be used and what is the third case. The third formula is total weight of actual mix divided by the total weight of standard mix into standard cost of standard mix – standard cost of actual mix right because two weights are different. Weights of the mixes are different. In case of A, it is 20 tonnes and in case of B, it is you can call it as not A but the standard is 20 tonnes and the actual is 30 tonnes. So, it means we have to find out the two weights are different.

So after adjusting the issues of the wastages and looking at the weights, two weights finally we are going to apply the formula number 3 and in the formula number 3 we know the formula just I told you now and we have already seen that we have already learnt about that formula.

So, third case is applicable in this case and now we will calculate this material mix variance. So, what is the total weight of actual mix? Total weight of actual mix is 30; 30 tonnes divided by total weight of standard mix is how much 20 tonnes. No adjustment of the wastage is required here and then you have to go for here something like this is standard cost of standard mix so we have to calculate the standard cost of the standard mix so how much is the standard cost of standard mix, this is going to be.

What is the standard cost of standard mix is 8 into 40 and then in the second case we are given the information, in this case, is if you look at the information given in this case we will have to find out here that is 20 into 30 and 8 tonnes into standard cost of standard mix. So it is going to be how much? 8 into the information given here is for this part that is 20 plus second is 12 tonnes and at the rate of how much 12 tonnes at the rate of 60. So it means it is going to be – standard cost of the actual mix, the second part of the formula is standard cost of actual mix so, it will be standard cost of actual mix into 10 into, 10 is the quantity and price is 40 and plus second part is what second part is 20 tonnes multiplied by 60.

So this is going to be something like this that is the standard cost of the actual mix. So, it means total weight of actual mix divided by the total weight of standard mix into standard cost of standard mix and the standard cost of actual mix, so this way we are going to calculate it and if you look at this, this will be something like, we have already given the quantity of A is 8 price is 40, quantity of B is 12, price is 60 and in case of the actual, the weight or the quantity of the A is 10 and quantity of B is 20 and finally the prices are also given. The standard price will remain the same.

So what is happening here in this case? This quantity and this quantity is different, this quantity and this quantity is different, but the prices are going to be same because these are standard cost of actual output right. If you solve this equation if you solve this whatever we have got till now. If you solve it out, this will come up as rupees this function, this total will be something and this will be minus this and this will work out as how much. Finally, this information will come out as

this value will come out as 1560 minus rupees how much 1600. So, this will come up as how much? This is going to be rupees 40 and it is going to be favorable or unfavorable. This is going to be unfavorable.

This is 40 and going to be unfavorable, so it means we have found out that what is the material mix variance. This is 40 and this is going to be the material mix variance which is unfavorable and we will now have to now find out why this variance material mix variance is unfavorable right. So, we could calculate the 3 variances, 4 variances rather, material cost variance, material price variance, material usage variance, and the material mix variance right.

Now, the fifth variance we have to calculate and that variance is the material yield variance. So, again the need for adjustment of the because I gave you the formulas for calculating the material yield variance. I gave you 2 and in that case what was that formula? In case of the normal situation, the formula was standard rate into actual yield - standard yield. But, here because we have to revise the standard because the actual yield is not as per the standard, it has differed. It is expected to be 27 but it has come up as 26.5, so that is not same.

So, what we have to do here is, we have to revise the standard and then apply the formula of MYV, material yield variance and then we will have to calculate. So, the standard rate into that is the actual output that is 26.5 tonnes minus standard output from the given input or the standard yield from the given input we have to calculate that, we are revising the standard and then calculate the variance. That variance I will do in the next class and then solve the fourth problem. Thank you very much.