(b) Mix Variance = SP x (Revised SQ – AQ)

Revised SQ:

A: $\frac{120}{100} \times 80 = 96$ B: $\frac{120}{100} \times 20 = 24$

A:	6 x (96 – 90) =	36 (F)
B:	12 x (24 – 30) =	72 (A)
		₹ 36 (A)

(c) Sub-usage Variance = SP x (SQ – RSQ)

A:	6 x (80 – 96) =	96 (A)
B:	12 x (20 – 24) =	48 (A)
		₹ 144 (A)

Verification:

Usage Variance = Mix Variance + Sub-usage Variance

180 (A) = 36 (A) + 144 (A)

Note: Material sub-usage variance is calculated when material yield variance cannot be calculated. For example, information may not be available about units of output. In such cases, usage variance is calculated on the assumption that a single job or work is the output. In this case it is difficult to compute yield variance. In such a situation material sub-usage variance is calculated.

Material Yield Variance

This variance is calculated on the basis of output. Material yield variance is that part of material usage variance which is due to the difference between standard yield and actual yield. The word 'yield' denotes 'output'. This variance is particularly important in the case of process industries.

Here also two situations may arise:

(1) When the total weight of actual mix and total weight of standard mix do not differ: In this case, the material yield variance is computed by applying the following formula:

MYV = Std. rate x (Actual yield – Std. yield)

or Std. rate (Standard loss – Actual loss)

$$\text{Std. rate} = \frac{\text{Std Cost of Std. mix}}{\text{Net Std. output or Std. yield}}$$

Net std. output or std. yield = Gross output – Std. Loss

Example 5

From the following, calculate material yield variance:

Standard	Actual
Material A: 100 kg. @ ₹ 7.50 per kg.	90 kg @ ₹ 7 per kg.
Material B: 50 kg. @ ₹ 12 per kg.	60 kg @ ₹ 11 per kg.
150	150

A standard loss of 10% is expected. The actual yield is 138 units.

Solution

MYV = Std. rate x (Actual yield – Std. yield)

$$\text{Std. rate} = \frac{\text{Std. cost of std. mix}}{\text{Net std. output}}$$

Std. cost of std. mix = (100 x 7.50) + (50 x 12) = 1350

Net std. output = 150 – 10% = 135

$$\text{Std. rate} = \frac{1350}{135} = \text{Rs. } 10$$

MYV = 10 x (138 – 135) = ₹ 30 (favourable)

(2) When the total weight of actual mix and total weight of standard mix differ: In this situation, revised standard mix has to be calculated first. Then, from this revised standard mix, the standard rate has to be calculated. In this case, the material yield variance is calculated by applying the following formula

MYV = Standard rate x (Actual yield – Revised Std. yield)

$$\text{Std. rate} = \frac{\text{Std. cost of revised std. mix}}{\text{Net std. output, i.e., revised std. yield}}$$

MUV = MMV + MYV

Example 6

The standard cost of a chemical mixture is as follows:

16 Kgs. of material A @ ₹ 75 per kg.

24 Kgs. of material B @ ₹ 250 per kg.

Actual cost for a period is as under:

22 Kgs. of material A @ ₹ 80 per kg.

28 kgs. of material B @ ₹ 240 aper kg.

Standard yield is 90% of input. Actual yield is 42 kgs. Compute material yield variance.

Solution

The actual weight of mix differs from standard. Therefore, revised standard mix is to be calculated.