# Abnormal Process Gain/ Yield:

Sometimes, loss under a process is less than the anticipated normal figure. In other words, **the actual production exceeds the expected figures**. Under such a situation the difference between actual and expected loss or actual and expected production is known as abnormal gain or yield. So, abnormal gain may be defined as an unexpected gain in production under the normal conditions. This arises due to over- estimation of process loss, improvements in work efficiency of workers, use od better technology in production etc.

**Treatment in Cost Accounts:** The process account under which abnormal gain arises is debited with the abnormal gain and credited to abnormal gain account which will be closed by transferring to the Costing Profit and Loss account. The cost of abnormal gain is computed on the basis of normal production.

**Question**  A product passes through Process- I and Process- II. Materials issued to Process- I amounted to  Rs. 40,000, Wages Rs.  30,000 and manufacturing overheads were Rs. 27,000. Normal loss anticipated was 5% of input. 4,850 units of output were produced and transferred-out from Process-I. There were no opening stocks. Input raw material issued to Process I were 5,000 units. Scrap has realisable value of Rs. 2 per unit.

**Answer:**

Dr.                                 Process-I Account                                 Cr.

| Particulars | Units | Total (Rs.) | Particulars | Units | Total (Rs.) |
|---|---|---|---|---|---|
| To Material | 5,000 | 40,000 | By Normal Loss | 250 | 500 |
| To Labour | - | 30,000 | By Process-II A/C (Transfer to Process-II) | 4,850 | 98,532 |
| To Overheads | - | 27,000 | | | |
| To Abnormal Gain A/C | 100 | 2,032 | | | |
| | 5,100 | 99,032 | | 5,100 | 99,032 |

**Value of Normal loss** = Scrap realisable value less cost to sale

Scrape realisable Value = 250 units x Rs. 2 = Rs. 500

**Value of Abnormal loss:**

= (Total Cost-Realisable value of normal loss / Total input units - Normal loss units ) * Abnormal Gain Units

= (97,000 – 500 / 5,000 units - 250 units)* 100 Units = 2,032

**Value of units transferred to Process-II:**

= (Total Cost-Realisable value of normal loss / Total input units - Normal loss units ) * Units transferred

= (97,000 – 500 / 5,000 units - 250 units)* 4,850 Units = Rs. 98,532


Dr.                               Abnormal Gain Account                               Cr.

| Particulars | Units | Total (Rs.) | Particulars | Units | Total (Rs.) |
|---|---|---|---|---|---|
| To Normal Loss A/c | 100 | 200 | By Process-I A/c | 100 | 2,032 |
| To Costing P&L A/c | - | 1832 | | | |
| | 100 | 2,032 | | 100 | 2,,032 |


# VALUATION OF WORK IN PROCESS

In the case of process type of industries, it is possible to determine the average cost per unit by dividing the total cost incurred during a given period of time by the total number of units produced during the same period. But this is hardly the case in most of the process type industries where manufacturing is a continuous activity. The reason is that the cost incurred in such industries represents the cost of work carried on opening work-in-process, closing work-in-process and completed units. Thus to ascertain the cost of each completed unit, it is necessary to ascertain the cost of work-in-process in the beginning and at the end of the process.

The valuation of work-in-process presents a good deal of difficulty because it has units under different stages of completion from those in which work has just begun to those which are only a step short of completion. Work-in-process can be valued on actual basis, *i.e.,* materials used on the unfinished units and the actual amount of labour expenses involved. However, the degree of accuracy in such a case cannot be satisfactory. An alternative method is based on converting partly finished units into equivalent finished units.

### Equivalent Units

Equivalent units or equivalent production units, means converting the incomplete production units into their equivalent completed units. Under each process, an estimate is made of the percentage completion of work-in-process with regard to different elements of costs, *viz.,* material, labour and overheads. It is important that the estimate of percentage of completion should be as accurate as possible. The formula for computing equivalent completed units is:

Equivalent completed units =(Actual number of units in the process of manufacture) x (Percentage of work completed)

For instance, if 25% of work has been done on the average of units still under process, then 200 such units will be equal to 50 completed units and the cost of work-in-process will be equal to the cost of 50 finished units.

The following table may be used to compute the equivalent units:

| Input Details | Units | Output Particulars | Units | Material % | Material Units c= a×b | Labour % | Labour Units e=a×d | Overhead % | Overhead Units g=a×f |
|---|---|---|---|---|---|---|---|---|---|
| | | | a | b | c= a×b | d | e=a×d | f | g=a×f |
| Opening W-I-P | xxx | Opening W-I-P* | xxx | xxx | xxx | xxx | xxx | xxx | xxx |
| Unit Introduced | xxx | Finished output** | xxx | xxx | xxx | xxx | xxx | xxx | xxx |
| | | Normal loss*** | xxx | - | - | - | - | - | - |
| | | Abnormal loss/Gain**** | xxx | xxx | xxx | xxx | xxx | xxx | xxx |
| | | Closing W-I-P | xxx | xxx | xxx | xxx | xxx | xxx | xxx |
| Total | xxx | Total | xxx | | xxx | | xxx | | xxx |

\* Equivalent units for Opening W-I-P is calculated only under FIFO method. Under the Average method, it is not shown separately.

\*\*Under the FIFO method, Finished Output = Units completed and transferred to next process *less* Opening WIP. Under Average method, Finished Output = Units completed and transferred.

\*\*\*For normal loss, no equivalent unit is calculated.

\*\*\*\*Abnormal Gain/ Yield is treated as 100% complete in respect of all cost elements irrespective of percentage of completion.

# STEPS IN PROCESS COSTING

For each production process, a Production Cost Report is prepared at the end of each accounting period. The objective of preparing the report is to know physical units and equivalent units in process, element wise cost of goods produced and transferred, goods in process (work-in-process), units lost due to abnormal reasons i.e. abnormal loss etc. To prepare the report, the following steps are generally followed:

**Step-1: Analysis of physical flow of production units**

The first step is to determine and analyse the number of physical units in the form of inputs (introduced fresh or transferred from previous process, beginning work- in-process) and outputs (completed and work-in-process).

**Step-2: Calculation of equivalent units for each cost elements**

The second step is to calculate equivalent units of production for each cost element i.e. for material, labour and overheads. It is calculated by taking the extent of work done in respect of each element. For example, if there are 1,000 units in work-in-process at the end of the month. All materials are introduced at the beginning of production process. For labour and overheads, 20% more work is required to get it completed. In this example, the equivalent units of work-in-process in respect of material would be 1,000 units (1,000 units × 100% complete) and for labour and overheads 800 units (1,000 units × 80% complete).

**Step-3: Determination of total cost for each cost element**

Total cost for each cost element is collected and accumulated for the period. The process of cost collection has already been discussed above.

**Step-4: Computation of cost per equivalent unit for each cost element**

In this step, the cost per equivalent unit for each cost element is calculated. The total cost as calculated in Step-3 is divided by the equivalent units as determined in Step-2.

**Step-5: Assignment of total costs to units completed and ending WIP**

In this step, the total cost for units completed, units transferred to next process, ending work in process, abnormal loss etc. are calculated and posted in the process account and production cost report.