# Guidance Note

# on

# Cost Accounting Standard

# on

# Capacity Determination

# (CAS-2) *(Revised 2015)*


Issued by

**THE INSTITUTE OF COST ACCOUNTANTS OF INDIA**

(A Statutory Body under an Act of Parliament)

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# Foreword

In continuation with the development of guidance notes and technical papers on important topics to provide technical guidance for the capacity building of its members, the Institute has come out with the Guidance Note on Cost Accounting Standard – 2 (CAS – 2) (Revised 2015) on Capacity Determination which lays down a set of principles and methods of classification, and determination of capacity of an entity for ascertainment of the cost of product or service and the presentation and disclosure in the cost statements.

The Companies Act 2013 included service sector also in the ambit of Section 148 for the purposes of maintenance of cost records and audit. Consequently, a need was felt to revise Cost Accounting Standard (CAS) - 2 on Capacity Determination. Accordingly the Cost Accounting Standards Board has revised the standard and now the Guidance Note has been developed on the revised standard. Para 18 of Form CRA-1 of the Companies (Cost Records & Audit) Rules, 2014 deals with capacity determination. The methodology provided under this para is similar to the CAS-2 issued by the Institute of Cost Accountants of India.

I am happy to note that CASB is making a consistence progress and I am hopeful that it will continue to come out with useful publications for the members of the profession. I take this opportunity to record my appreciation for the entire team involved in development of this Guidance Note led by the Chairman, Cost Accounting Standards Board and all the members of the Board. The secretarial support given by the Technical Department in bringing out this guidance note is laudable and I hope that it will continue to further improve its working.

I am confident that this Guidance Note will help the practitioners, industry and other stakeholders to understand and implement various principles and methods enshrined in the Cost Accounting Standard on Capacity Determination.

**(CMA P.V. Bhattad)**

11th May 2016

***CMA Balwinder Singh***
***Chairman***
***Cost Accounting Standards Board***

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## *PREFACE*

*The Cost Accounting Standards Board in its 82nd meeting held on 16thMarch 2016 approved the Guidance Note on Cost Accounting Standard (CAS-2) (Revised 2015) on Capacity Determination. Board revised the Cost Accounting Standard on Capacity Determination keeping in view the changes brought out by the Companies Act 2013 vide section 148 whereby the "Services" have also been included for the purpose of maintenance of cost records and cost audit by the class of companies. Board approved revised Standard on the Cost Accounting Standard on Capacity Determination (CAS-2) (Revised 2015) replacing the Cost Accounting Standard on Capacity Determination (CAS - 2) (Revised 2012), which was approved by the Council in November 2015. The revised standard shall be mandatory from 1st April, 2016 for being applied for preparation and certification of the General Purpose Cost Statements. The Guidance Note on Cost Accounting Standard – 2 (CAS–2)(Revised 2015) on "Capacity Determination" deals with principles and methods as provided in the CAS-2 (Revised 2015) and practical aspects in connection with the determination of capacity for a product or service. The Guidance Note gives examples and illustrations to explain practical aspects in connection with determination of Capacity for products and services.*

*I sincerely thank all the members of the Cost Accounting Standards Board for their valuable contribution in finalization of this Guidance Note in the present form. I would like to place on record the whole hearted support extended to Cost Accounting Standards Board by CMA P.V. Bhattad, President, CMA Manas Kumar Thakur, Vice President and CMA B.B. Goyal, Advisor (ICWAI-MARF).*

*I also acknowledge the efforts put in by CASB Secretariat headed by CMA J.K. Budhiraja, Senior Director (Technical) and Secretary-CASB and CMA M L Mehta (Advisor-CASB), in bringing out this Guidance Note. I am confident that the Secretariat will keep up the scorching pace set so far and releases the Guidance Note on the remaining CAS in near future.*

*I am confident that this Guidance Note would be well received by members, practitioners and other professionals.*

*CMA Balwinder Singh*

*(Chairman, CASB)*
*Date: 8thApril 2016*

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# *Guidance Note on Cost Accounting Standard on Capacity Determination – CAS-2 (Revised 2015)*

The Council of the Institute of Cost Accountants of India has issued the Cost Accounting Standard – 2 (CAS – 2)(Revised 2015) on Capacity Determination which lays down a set of principles and methods of classification, and determination of capacity of an entity for ascertainment of the cost of product or service and the presentation and disclosure in the cost statements. The Cost Accounting Standards have been set in **bold italic type** and reference number of the standard has been retained.

The Guidance Note deals with principles and methods as provided in the CAS-2 (Revised 2015) and practical aspects in connection with the determination of capacity of a production or operating facility. In the preparation of cost statement and its attestation, capacity shall be determined with reference to CAS-2(Revised 2015).

The Ministry of Corporate Affairs have notified The Companies (Cost Records and Audit) Rules, 2014. As per rule 3, for the purposes of sub-section (1) of Section 148 of the Companies Act, 2013, the class of companies including foreign companies defined in clause (42) of Section 2 of the Companies Act, 2013 (18 of 2013), engaged in the production of the goods or providing services specified in the Table A and Table B to the above referred Rules have to maintain cost records in Form CRA-1 annexed to above rules having an overall turnover from all its products and services of rupees thirty five crore or more during the immediately preceding financial year.

Form CRA-1 annexed to the "Companies (Cost Records and Audit) Rules, 2014 specified various items of costs which are to be included in the books of accounts. Para 18 of Form CRA-1 of the above Rules deals with Capacity Determination.

As per proviso to Section 148 (3) of the Companies Act 2013, the auditor conducting the cost audit shall comply with the Cost Auditing Standards issued by the Institute of Cost Accountants of India with the approval of Central Government.

*Cost Auditing Standard 103 on Overall Objective of the Independent Cost Auditor and conduct of an audit in accordance with Cost Auditing Standards*, states that the cost auditor conducting cost audit shall comply with the Cost Accounting Standards (CAS) and Generally Accepted Cost Accounting Principles (GACAP) issued by the Institute of Cost Accountants of India.

## Chapter – 1 Introduction

**Need for Capacity Determination:**

The capacity details are required by internal management for planning, scheduling of production and monitoring during implementation of the planned programme. Monitoring leads to corrective actions to avoid any probable loss of production. Better utilisation of capacity means better utilization of resources, as entities commit resources based on planned capacity utilisation. Moreover, overhead accounting requires determination of the normal capacity, to be used as the denominator in establishing overhead absorption rates. In view of above the Council of the Institute of Cost Accountants of India (hereinafter referred "Institute") issued CAS-2 on Capacity Determination in 2002.

The CAS-2 on Capacity Determination in 2002 was revised by the Institute in 2012 and was applicable for manufacturing sector. The Companies Act, 2013 includes service sector also in the ambit of Section 148 for the purposes of maintenance of cost records and audit. Accordingly, the Central Government issued "The Companies (Cost Records & Audit) Rules, 2014" including Service Sector also for the purposes of maintenance of cost records and audit. In view of the above provisions there was a need to revise Cost Accounting Standard (CAS) - 2 on Capacity Determination.

The CAS-2 has used various terms relating to capacity, such as installed capacity, actual capacity utilization, normal capacity, normal idle capacity etc.

Para 18 of Form CRA-1 of the Companies (Cost Records & Audit) Rules,2014 deals with capacity determination. The methodology provided under this para is similar to the CAS-2 issued by the Institute of Cost Accountants of India.

Under Part B and Part C of the Annexure to the Cost Audit Report prescribed under Form CRA-3 of the above aforesaid Rules, quantitative information is to be furnished in respect of 'Manufactured Sector' and 'Service Sector' as follows:

**Manufactured Sector (Part B):**

Available Capacity:

(a) Installed Capacity;
(b) Capacity enhanced during the year, if any;
(c) Capacity available through leasing arrangements, if any;
(d) Capacity available through loan licence /third parties;
(e) Total available capacity [ (a) to (d)]

The above information is to be furnished for each product separately.

**Service Sector (Part C):**

Available Capacity:

(a) Installed Capacity;
(b) Capacity enhanced during the year, if any;
(c) Total available capacity [ (a)+(b)]

The above information is to be furnished for each service separately.

**Need for Capacity Determination**

The capacity details are required for:

i) Identify capacities of each of deployed facilities and through the process assess bottlenecks;

ii) Evaluating potential for future expansion, understanding the scope and effort towards de-bottlenecking and balancing of surplus capacities;

iii) Internal management for planning, scheduling of production and monitoring during implementation of the planned programme

**Rationale**

i) It is observed that the practice to assess the capacity of facilities is either absent or deficient; Planning is resorted directly from the judged bottleneck, without systematic evaluation of facilities.

ii) The concepts, described above, also relate with CAPEX evaluation and parameters recognised to determine Pay Back and ROI.

## Chapter – 2 Definitions

***4.1. Abnormal Idle Capacity: Abnormal idle capacity is the difference between normal capacity and actual capacity utilization where the actual capacity is lower than the normal capacity.***

***4.2. Actual capacity utilization: Actual capacity utilization is measured in terms of volume of production achieved or service provided in a specified period.***

***4.3. Cost Object: An activity, contract, cost Centre, customer, product, process, project, service or any other object for which costs are ascertained.***

***4.4. Installed capacity: Installed capacity is the maximum capacity of producing goods or providing services, determined either based on technical specification of the facility or through a technical evaluation.***

***4.5. Normal Capacity: Normal capacity is the volume of production or services achieved or achievable on an average over a period under normal circumstances taking into account the reduction in capacity resulting from planned maintenance.***

***4.6. Normal Idle Capacity: Normal idle capacity is the difference between installed and normal capacity.***

## *Chapter 3 Determination of Capacity*

### *5. Determination of Capacity:*

### *5.1. Capacity shall be determined in terms of units of production or services or equivalent machine or man hours.*

Capacity generally implies the maximum result (e.g., output) that can be achieved by the best possible use of the available facilities and resources. Determination of capacity in terms of units of production or volume of services provided or equivalent machine or man hours depends on the type of industry, manufacturing process, and other similar factors. These are:

i) Output quantity:

This will be applicable only in the case of single product non-seasonal plants. The standard variables to be reckoned with will be:

A year will be deemed to be having estimated number of working days say 330 of three shifts each. In case of continuous plant, it may be calculated for 330 days x 24 hours (365 days minus normal shutdown period for necessary overhauling).

(a) A normal rate of efficiency of production will be arrived at and established for each product. The upper limit of the range of rate of efficiency will always be considered.

In other words, maximum production per shift/day achieved for a reasonable period will be taken as a base for calculation of installed capacity.

(b) If the production flow is through separate segments of the plant, with an intermediate output occurring at the end of each segment the lowest segmental capacity becomes the determinant of the overall plant capacity.

ii) Available machine or man hours:

This unit for measuring and expressing capacity will be applicable in most of the industries particularly where products /sizes/ profiles are manufactured from the same facilities. The relevant variables will be:

(a) A year of say 330 working days of 3 shifts, each will be norm (or industry norm, if available);

(b) A normal production time (turn-around time) will include set-up time, tool change-over time, production cycle time and time taken for equipment cleaning;

(c) Different products/sizes/profiles coming of the same plant will be converted into standard production hours using standard time required per unit of product;

(d) Where product is having various diameters, thickness, Horse Power (HP) rating, Kilo Watt (KW) rating and so on, equivalent production shall be calculated taking one product as a standard unit. The production of other products should be expressed in terms of this selected standard unit;

(e) In determining standard hour for each product manufactured or service provided a normal efficiency rate is to be used;

(f) Segmental imbalances or excess capacities expressed in terms of available machine hours or man hours is to be indicated along with the declared capacity; and

(g) Capacity in respect of services provided will be based on available working hours and facilities.

iii) **Joint products and by-product:** capacity shall be measured in terms of outputs of standard mix, output being expressed separately for each product .

Capacity depends upon the fixed amount of resources or available facilities with which the management expects to run the business.

***5.2. Installed capacity: Installed capacity is usually determined based on:***

***i) Technical specifications of facility.***

***ii) Technical evaluation.***

***iii) Capacities of individual or interrelated production or operation Centres.***

***iv) Operational constraints or capacity of critical machines or equipment.***

***v) Number of shifts or machine hours or man hours.***

Generally installed capacity is based on the specifications of machine or equipment given by the suppliers. It is the rated capacity of a plant installed, that is, the maximum possible productive capability of the plant as rated by the manufacturers or erector of the plant. It refers to the output that can be achieved if production is carried out at a maximum speed without interruptions. It is the potential output that could be achieved with installed capacity if it is fully used.

If the capacities of different operations in the production process are not balanced, the "*bottleneck operation*" which has the minimum capacity among all the operations, determines the capacity of the complete production process. For Example: There are four operations – A,B,C and D. Capacities of A, B, and C is 15000 units each and capacity of D is 12000 units, then the capacity of the production process will be 12000 units.

In case technical specifications of facility are not available, the estimates by technical experts on capacity under ideal conditions shall be considered for determination of installed capacity.

The installed capacity is the production capacity of the machineries installed in the unit for a period or the year under report. The installed capacity is to be determined with reference to a single working shift or double or triple shift working as per technical specifications.

### *5.3. Reassessment of Installed Capacity:*

***Installed capacity shall be reassessed in case of any change due to addition, deletion, modification or for any other reason from the date of such change.***

In case any modifications are made in some machinery or balancing equipment are added subsequently and this results in enhanced installed capacity, the installed capacity shall be reassessed. Similarly, if a machine is discarded or disposed off, the installed capacity shall be reassessed accordingly. Addition or deletion shall be effective from the date of such change.

In case the installed capacity is reassessed as per directions of the Government or Regulator, the installed capacity shall be in accordance with the said directives.

### *5.4. Normal Capacity:*

***Normal capacity is determined after suitable adjustments to the Installed Capacity.***

The following adjustments from installed capacity shall be made to determine normal capacity:

i) Time lost due to scheduled preventive or planned maintenance;

ii) Number of shifts or machine hours or man hours;

iii) Holidays, normal shut down days, normal idle time; and

iv) Normal time lost in batch change over;

Illustration of Normal Capacity:

i) Technical estimate of a day's maximum production (or hourly production) should be made.

ii) Daily production should be multiplied by normal working days, that is, total days in year less:

(1) Weekly off;

(2) statutory holidays; and

(3) normal shut down period for repairs and maintenance.

Generally working days are taken at 300 days in a year.

In case of continuous plant, it may be calculated for 330 days x 24 hours (365 days minus normal shutdown period for necessary overhauling).

Illustrations of calculation of installed capacity, normal capacity, capacity utilization for engineering, spinning sugar, pharmaceutical industry are at Annexure 1 ,2 ,3, 4 and 5.

The installed capacity of a **spinning mill** is expressed in terms of number of spindles on single shift basis. If it works on three shift basis, its installed capacity is to be calculated accordingly. The output of yarn depends upon the count of yarn produced. The output of yarn is to be converted to a standard count usually of 20s, 40s and expressed in grams per spindle per shift. Similarly for weaving installed capacity is expressed in terms of loom shift. The production per loom shift will depend on the type of loom, type of cloth that is grey cloth or processed cloth.

In case of a diesel engine, the capacity of the product will vary as per Horse power/Number of cylinders and so on. One number of diesel engine with 4 cylinders may be equivalent to the production of 4 numbers of diesel engine with 1 cylinder.

In case of machineries of varying speeds (time factors) producing products of different thickness (gauges of products), installed capacity in terms of metric tonne (MT) may not be comparable with actual production in MT for arriving at capacity utilisation.

Where product is having various diameters, thickness, HP rating, KW rating and so on, equivalent production should be calculated taking one product as a standard unit. The production of other products should be expressed in terms of this selected standard unit.

**Capacity of a Hospital** is to be determined based on the Number of Available Beds in the Hospital for In-Patients (IP) multiplied by 365 days. Capacity Utilisation is to be calculated on the basis of Number of Bed Days occupied. However, in case of different procedures / departments, Capacity is to be determined separately on the basis of available equipment & facilities.

In case of **aeronautic service industry**, where aircrafts of different capacities are landing and taking off depending upon the type of aircraft of different capacities, cargo handled of different bag sizes, and weight, it is to be based on certain technical considerations such as number of passengers or volume of cargo handled per annum and so on.

**Capacity of an Airport** is to be determined based on the Capacity of Passengers that can be handled by the Airport during peak hours. The Capacity of Airport should be determined based on the capacity to handle

peak load passengers by the Terminal covering Seating, Car Parking and other facilities based on the guidelines of International Civil Aviation Federation.

**Capacity of the Port** is to be determined based on the available facilities for handling of different materials. Capacity should be determined Material-wise as different Materials require different handling equipment / mechanisms. The Capacity of the Port is to be calculated for different materials covering Number of Berths, Barge Jetties, Anchorages and Handling Equipment. Generally, Capacity of a Port should be declared in Tonnage for different Materials.

**Capacity of an Education Institution** is to be determined based on the Number of Seats available in each Section / Class / Course.

## *Chapter 4* *Presentation*

### *6.1. Cost Statements shall present Installed capacity, normal capacity and actual production of goods or services provided, in absolute terms.*

Details of installed capacity, normal capacity and actual production of goods and services provided is to be indicated in absolute quantity. If installed capacity is enhanced or discarded during the period under report, the same is to be indicated. If the unit of measurement is other than actual production, such as per shift and so on, installed capacity, and normal capacity shall be indicated in terms of goods produced or services provided to have a meaningful comparison of actual production of goods or services provided in absolute terms.

### *6.2. Actual Capacity utilization shall be presented as a percentage of installed capacity.*

Actual production of goods or services provided is to be considered and expressed as a percentage of installed capacity. Production due to leasing arrangement, off loading or sub-contracting should be adjusted for actual capacity utilisation.

## *Chapter 5 Disclosure*

***7.1 The cost statements shall disclose the following*:**

***a. Basis for arriving at different types of capacity.***

***b. Changes in the installed capacity or normal capacity with reason thereof.***

***c. Capacity enhanced through outsourcing.***

***d. Capacity outsourced to others***

***e. Details of actual production of goods or services provided.***

***i) Self-Manufactured goods or services provided through in-house facility***

***ii) Goods Produced or services provided through outsourcing***

***f. Reasons for low capacity utilization.***

***g. Abnormal cost due to under-utilization of capacity.***

Disclosure is to be made for the basis adopted for arriving at installed capacity and normal capacity. Details shall be furnished for shift working that is single shift or multiple shifts. In case there is change in the installed and normal capacity either due to increase or reduction in capacity during the period under report, the same shall be disclosed indicating the revised capacity. Details of capacity enhanced through leasing arrangements, or outsourced to others, if any, are to be indicated separately. In case there is low capacity utilization either due to lower demand or breakdown and so on, details are to be furnished with reasons.

If due to underutilization of capacity, there is abnormal cost, the same shall be disclosed with reason thereof. Abnormal idle capacity is the difference between normal capacity and actual capacity utilization where the actual capacity is lower than the normal capacity.

***7.2 Disclosures shall be made only where material, significant and quantifiable.***

A piece of information is material, if its non disclosure could influence the decision of a user. Materiality and significance of any information will not be same for different entities but would depend from situation to situation. If the information is material, significant and quantifiable, the same is to be disclosed.

***7.3 Disclosures shall be made in the body of the Cost Statement or as a foot note or as a separate schedule.***

Disclosure of information for capacity in the body of cost statement will depend on its nature and materiality. If information for capacity affects cost of production or operation materially and can be identified with a cost object, the same is to be disclosed in the cost statement or by way of a foot note.

**Annexure 1**

**Illustration of capacity determination in Engineering Industry**

| | | |
|---|---|---|
| Manufacturer's Specifications - capacity per hour | = | 500 Units |
| No. of shifts (each shift of 8 hours) | = | 3 shifts |
| **Holidays in a year:** | | |
| Sundays | = | 52 |
| Other holidays | = | 13 |
| Annual maintenance - days | = | 30 |
| Preventive weekly maintenance for the machine on Sunday. | | |
| Normal idle capacity for batch change over, Lunch, personal needs etc. | = | 1 hour per shift |
| Production based on sales expectancy in past 5 years | = | 30.1, 26.9, 29.7, 24.4 and 30.2 lakhs units |
| Actual Production for the year | = | 30.1 lakhs unit |
| **CALCULATION OF CAPACITY** | | |
| Installed Capacity for the facility per annum | = | 365 * 8 *3 * 500 = 43.8 lakhs units |
| Normal Capacity | = | = (365 – 52 –13 - 30) * (8 - 1) * 3 * 500 = 28.35 lakhs units |
| Normal capacity on sales Expectancy | = | (30.1 + 29.7 + 30.2) / 3 = 30.0 lakhs units |
| Actual capacity utilisation in terms of installed capacity | = | 30.1/43.8 lakhs = 68.72 % |
| Normal Idle capacity | = | Installed capacity – Normal Capacity<br>= 43.8 – 28.35 =15.45 lakhs units |

**Annexure 2**

**Illustration of Capacity Utilization in Textile – Spinning Mill**

| | | |
|---|---|---|
| Installed capacity of Spinning Mills | = | 26208 spindles on single shift basis |
| Actual spindles available during the year<br>(After adjustment for idle spindles) | = | 25605 spindle on single shift basis |
| Total spindle shift worked on three shift basis | = | 74613 spindle shifts |
| Average spindle shift worked on single shift basis | = | 74613/3 = 24871 |
| Actual capacity utilisation on single shift basis | = | 24871/26208*100 = 94.90 % |

**Annexure 3**

**Illustration of Capacity Utilization in Seasonal Industry – Sugar Industry**

| | | |
|---|---|---|
| Capacity expressed as | = | Cane crushed per Day (in Tonnes) |
| Installed capacity | = | 3000 Tonnes cane per day |
| Total No .of season days worked | = | 150 days |
| Total cane crushed during the season | = | 284550 Tonnes |
| Average cane crushed per day | = | 284550/150 =1897 tonnes per day |
| Capacity Utilisation | = | 1897/3000 = 63.23% |

**Annexure-4**

**(Illustration 4.1)**

**Illustration of Capacity Utilization in Pharmaceutical Company-Bulk Drugs, having Common Manufacturing facility with Multiple Reaction Vessel for Multiple Bulk drugs production**

A Pharmaceutical company has 30 reaction vessels of different capacity spread over 5 production blocks at one location. The company manufactures approx. 50 types of Bulk drugs in a year. Product can be manufactured in any of the vessels depending on the requirement of batch size and quantity. Every year a few new types of bulk drugs get added in the product range and few bulk drug production gets discontinued.

Company is working for 365 days in 3 shifts.

Capacity is determined based on **Total Volumetric reaction hours** (GN of CAS-2 Point 5.1.ii-Available Machine or man hours)

Total Volumetric reaction hours available = Each reactor Capacity*Total hours available

Capacity utilization percentage = Total Volumetric reaction hours used/Total volumetric reaction hours available

| Block | Reaction Vessel | Vessel Capacity in Ltr. | Installed Capacity 365 days, 3 shift working | Available Hrs in Financial Year for 322 days working | Total Reaction Hours Available | Total Actual Hours Use in Financial Year 2016-17 | Total Actual reaction Hours Vessel Used | % age Capacity Utilisation* |
|---|---|---|---|---|---|---|---|---|
| | | Ltr. | Reaction Hours | Hours | Reaction Hours | Hours | Reaction Hours | % |
| A | B | C | D | E | F=C*E | G | H=C*G | I |
| Block-1 | R-101 | 4,000 | 3,50,40,000 | 7,320 | 2,92,80,000 | 6,032 | 2,41,28,000 | 82.40% |
| Block-1 | R-102 | 4,000 | 3,50,40,000 | 7,320 | 2,92,80,000 | 4,088 | 1,63,52,000 | 55.85% |
| Block-1 | R-103 | 3,000 | 2,62,80,000 | 7,320 | 2,19,60,000 | 3,104 | 93,12,000 | 42.40% |
| Block-1 | R-104 | 250 | 21,90,000 | 7,320 | 18,30,000 | 4,496 | 11,24,000 | 61.42% |
| Block-1 | R-105 | 100 | 8,76,000 | 7,320 | 7,32,000 | 3,944 | 3,94,400 | 53.88% |
| Block-1 | R-106 | 500 | 43,80,000 | 7,320 | 36,60,000 | 2,648 | 13,24,000 | 36.17% |
| Block-2 | R-201 | 1,000 | 87,60,000 | 7,320 | 73,20,000 | 2,888 | 28,88,000 | 39.45% |
| Block-2 | R-202 | 1,000 | 87,60,000 | 7,320 | 73,20,000 | 3,272 | 32,72,000 | 44.70% |
| Block-2 | R-203 | 1,500 | 1,31,40,000 | 7,320 | 1,09,80,000 | 2,432 | 36,48,000 | 33.22% |
| Block-2 | R-204 | 1,600 | 1,40,16,000 | 7,320 | 1,17,12,000 | 6,294 | 1,00,70,400 | 85.98% |
| Block-2 | R-205 | 2,500 | 2,19,00,000 | 7,320 | 1,83,00,000 | 5,648 | 1,41,20,000 | 77.16% |
| Block-2 | R-206 | 250 | 21,90,000 | 7,320 | 18,30,000 | 4,688 | 11,72,000 | 64.04% |
| Block-3 | R-301 | 250 | 21,90,000 | 7,320 | 18,30,000 | 5,072 | 12,68,000 | 69.29% |
| Block-3 | R-302 | 4,000 | 3,50,40,000 | 7,320 | 2,92,80,000 | 5,504 | 2,20,16,000 | 75.19% |
| Block-3 | R-303 | 3,000 | 2,62,80,000 | 7,320 | 2,19,60,000 | 6,032 | 1,80,96,000 | 82.40% |
| Block-3 | R-304 | 1,000 | 87,60,000 | 7,320 | 73,20,000 | 5,216 | 52,16,000 | 71.26% |
| Block-3 | R-305 | 800 | 70,08,000 | 7,320 | 58,56,000 | 5,744 | 45,95,200 | 78.47% |
| Block-3 | R-306 | 4,000 | 3,50,40,000 | 7,320 | 2,92,80,000 | 5,816 | 2,32,64,000 | 79.45% |
| Block-4 | R-401 | 1,000 | 87,60,000 | 7,320 | 73,20,000 | 5,624 | 56,24,000 | 76.83% |
| Block-4 | R-402 | 4,000 | 3,50,40,000 | 7,320 | 2,92,80,000 | 5,408 | 2,16,32,000 | 73.88% |
| Block-4 | R-403 | 6,300 | 5,51,88,000 | 7,320 | 4,61,16,000 | 5,360 | 3,37,68,000 | 73.22% |
| Block-4 | R-404 | 2,000 | 1,75,20,000 | 7,320 | 1,46,40,000 | 6,056 | 1,21,12,000 | 82.73% |
| Block-4 | R-405 | 630 | 55,18,800 | 7,320 | 46,11,600 | 4,400 | 27,72,000 | 60.11% |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Block-4 | R-406 | 250 | 21,90,000 | 7,320 | 18,30,000 | 5,528 | 13,82,000 | 75.52% |
| Block-5 | R-501 | 1,000 | 87,60,000 | 7,320 | 73,20,000 | 3,776 | 37,76,000 | 51.58% |
| Block-5 | R-502 | 630 | 55,18,800 | 7,320 | 46,11,600 | 4,256 | 26,81,280 | 58.14% |
| Block-5 | R-503 | 250 | 21,90,000 | 7,320 | 18,30,000 | 3,656 | 9,14,000 | 49.95% |
| Block-5 | R-504 | 1,000 | 87,60,000 | 7,320 | 73,20,000 | 4,472 | 44,72,000 | 61.09% |
| Block-5 | R-505 | 500 | 43,80,000 | 7,320 | 36,60,000 | 3,632 | 18,16,000 | 49.62% |
| Block-5 | R-506 | 630 | 55,18,800 | 7,320 | 46,11,600 | 4,400 | 27,72,000 | 60.11% |
| | | | 44,62,34,400 | | 37,28,80,800 | | 25,59,81,280 | 68.65% |

**Note:**

| | |
|---|---|
| 1) Cost apportionment is to be done for each reaction vessel on the basis of its capacity utilisation and apportioned to APIs using the vessel. | |
| 2) Reporting of overall capacity utilisation would be the total weighted average of utilisation percentage taking all vessels together. | |
| 1. Number of days in year | 365 |
| 2. Less: Maintenance down time 12M*2 days | 24 |
| 3. Less: Product Changeover Time (No of Product 50*8 hours/24) | 17 |
| 4. Less: Level 1 Cleaning Time during batch changeover (No of Batch 450*1 hours/24) | 19 |
| 5. No of Days Available for the year | 305 |
| 6. No of Hours Available for each Reactor (No of days available for the year*24) | **7,320** |

* Assumed that each product will be made in 10 Batches, Hence total 500 Batches will be produced during the period.

* Level 1 Cleaning is required for (500 Batches - 50 Batches= 450 Batches)

* Time roundup to next hours.

*Mutually Exclusive Reaction Vessel may be excluded or Considered as one reaction vessel for Capacity

* Standby reaction vessel can be excluded for capacity calculation

**Production capacity in Tons (For reporting purpose)**

| **Production Capacity in Tons (For reporting purpose)** | | | | |
|---|---|---|---|---|
| A. Registered Capacity (As approved by PCB) | 2,40,000.00 | Kg | 240 | Tons |
| B. Installed Capacity | 89,650.86 | Kg | 89.65 | Tons |
| C. Normal Capacity | 74,913.74 | Kg | 79.09 | Tons |
| D. Actual Capacity | 51,428.00 | Kg | 51.43 | Tons |

**Note:**

The Installed Capacity, Actual Production and other quantitative details are required to be provided in MT or Kgs since the cost per unit is to be calculated at rupees per MT or rupees per Kg. However, the capacity utilisation percentage would be an input figure computed on the above basis of hours. There will be no conflict due to this in XBRL. It may be noted that the percentage utilisation reported on the basis of reaction hours will not be the same if it is calculated on the basis of MT or Kg. Such computation would be incorrect. In the reporting, a note should be provided explaining that the capacity utilisation percentage has been computed on the basis of reaction hours and not on tonnage.

| **Particulars** | **Kgs** |
|---|---|
| **1. Available Capacity** | |
| (a) Installed Capacity at start of reporting period | 74913.735 |
| (b) Capacity enhanced during reporting period | |
| (c) Capacity available through leasing arrangements | |
| (d) Capacity available through loan license or third parties | |
| (e) Available Capacity of Product or Activity group | 74913.735 |
| **2. Actual Production** | |
| (a) Self manufactured | |
| (b) Produced under leasing arrangements | |
| (c) Produced on loan license / by third parties on job work | |
| (d) Actual Production Quantity | - |
| **3. Production as per Excise Records** | |
| **4. Capacity Utilization (in-house)** | **68.65%** |

**Note:**

1. Enter the actual production quantity in Kgs here of all the APIs being reported.
2. In case each API is having a separate cost statement, the actual quantity would represent production of the respective APIs.
3. The Installed Capacity and Percentage utilisation will be same in all sheets.

**Annexure-4**

**(Illustration 4.2)**

## Equivalent Standard Time Considered for Number of Batches Calculation

**Illustration of Capacity Utilization in Pharmaceutical Company - Formulation for Sterile Product Division**

A pharmaceutical company has 2 production lines. By changing minor equipment lines can produce Vials/PFs. At a time, only one batch can be taken for production for each line. As the medicines are atmosphere sensitive, it cannot be exposed to environment for a certain period. Hence batch size and Batch time are important and limiting factor. Major costs are associated with changeover of batches. After every batch, level-1 or level -2 (Product changeover) cleaning is required.

Company have 10 product manufacturing plan in Financial Year. Company is working for 365 days in 3 shifts.

Capacity determination is based on Total number of Batches manufactured.

Capacity utilization percentage = Actual Number of Batches produced/ Total Standard Number of Batches can be produced.

**Capacity available for each drug is as under:**

| Name of Drugs | Standard Batch Size | Standard Time Required per Batch | Equivalent Standard Batch Factor | Actual Number of Batches Produced | Equivalent Actual Number of Batches Produced |
|---|---|---|---|---|---|
| Unit of Measurement | Nos | Hours | Times | Nos | Nos |
| A | B | C | D | E | F |
| A-Vials | 55,372 | 36 | 0.78 | 28 | 22 |
| B-PFS | 24,808 | 34 | 0.74 | 5 | 4 |
| C-Vials | 7,814 | 28 | 0.61 | 8 | 5 |
| D-Vials | 42,172 | 33 | 0.72 | 23 | 17 |
| E-Vials | 28,888 | 38 | 0.83 | 4 | 3 |
| F-Vials | 31,867 | 31 | 0.67 | 6 | 4 |
| G-Vials | 28,584 | 35 | 0.76 | 11 | 8 |
| H-PFS | 66,666 | 46 | 1.00 | 93 | 93 |
| I-PFS | 28,301 | 37 | 0.80 | 13 | 10 |
| J-Vials | 43,584 | 34 | 0.74 | 12 | 9 |
| | | 35 | 0.77 | 203 | 175 |

**Note:**

*Batches considered after roundup for any fraction batch

* Product H-PFS is considered as Base product for equivalent unit.

| **Maximum no of Batches can be produced in a year** | | | | |
|---|---|---|---|---|
| 1. | Number of days in year | | | 365 |
| 2. | Less: Maintenance down time 12M*2 day | | | 24 |
| 3. | Less: Product Changeover (No of Prod. 10*4 times in year*6 hrs. cleaning) | | | 10 |
| 1. | Less: Level 1 Cleaning time (No of Batch X 2 hours/24) (308-10*4) | | 268 | 22 |
| 2. | No of Days Available for the year | | | 309 |
| 3. | No of Hours Available for each Line (No. of days available * 24) | | | 7,416 |
| 4. | No of Hours Available for 2 Line (No. of hours available for each line * 2) | | | 14,832 |
| 5. | Average Standard Batch Time (Maximum batch hour taken as factor) | | | 46 |
| 6. | Number of Batch Manufacturing in a year (No. of hours available / Average standard batch time) | | | 322 |
| 7. | Minimum Maximum batch Can be manufactured considering +/- 3% Variation | | 312 | 332 |
| **Production Capacity** | | | | **No. of Batch** |
| A. Installed Capacity | (365 days * 24 hrs * 2 line) / standard batch hours | | Nos | 381 |
| B. Normal Capacity | | | Nos | 332 |
| C. Actual Capacity Utilised (Equivalent number of batches) | | | Nos | 175 |
| **Capacity Utilization Percentage for the facility** | | | | 52.7% |
| * Installed Capacity can be Based on Technical Evaluation also. | | | | |
| * Normal Capacity considered after 3% Variation i.e. Actual number of equivalent batches considered after 3% variation | | | | |

**Annexure-4**

**(Illustration 4.3)**

**Illustration of Capacity Utilisation in Pharmaceutical company –Bulk Drugs, having a common reaction vessel with limited bulk drug product range**

| |
|---|
| A pharmaceutical company has a reaction vessel which is common for three drugs – A, B and C. Capacity utilization is limited to this sophisticated reaction vessel through which all the three drugs pass through. It can be used for only 7200 hours in a year after taking into account maintenance and down time. |
| Capacity Utilization for each drug is on the basis of Installed capacity for each drug depending upon: |
| Total vessel time available / standard reaction time per batch * Batch size: |
| Capacity available for each drug is as under: |

**Case 1**

| Drug | Actual Available | Standard Reaction time per batch | Batch Size | Actual Production | For Actual Production | | Percentage Utilisation |
|---|---|---|---|---|---|---|---|
| | | | | | No. of Batches | Standard | |
| | Hours | Hours | Kgs. | MT | | Hours | |
| A | | 5 | 600 | 240 | 400 | 2000 | 27.78% |
| B | | 4 | 400 | 280 | 700 | 2800 | 38.89% |
| C | | 3 | 200 | 160 | 800 | 2400 | 33.33% |
| Total | 7200 | | | 680 | 1900 | 7200 | 100.00% |

**Case 2**

| Drug | Actual Available | Standard Reaction time per batch | Batch Size | Actual Production | For Actual Production | | Percentage Utilisation |
|---|---|---|---|---|---|---|---|
| | | | | | No. of Batches | Standard | |
| | | Hours | Kgs. | MT | | Hours | |
| A | | 5 | 600 | 231 | 385 | 1925 | 26.74% |
| B | | 4 | 400 | 260 | 650 | 2600 | 36.11% |
| C | | 3 | 200 | 150 | 750 | 2250 | 31.25% |
| Total | 7200 | | | 641 | 1785 | 6775 | 94.10% |

**Note: In Case 1, the product mix is such that there is exactly 100% utilisation. In Case 2, due to change in product mix, the capacity utilisation is 94.10 %**

**Case 2- Data with**

| **Drug** | **Actual Available Time** | **Standard Reaction time per batch** | **Batch Size** | **Actual Production** | **For Actual Production** | | **Percentage Utilisation** |
|---|---|---|---|---|---|---|---|
| | | | | | **No. of Batches** | **Standard** | |
| | **Hours** | **Hours** | **Nos.** | **Nos.** | | **Hours** | |
| A-Vials | | 36 | 55,372 | 15,45,190 | 28 | 1008 | 6.80% |
| B-PFS | | 34 | 24,808 | 1,21,800 | 5 | 170 | 1.15% |
| C-Vials | | 28 | 7,814 | 57,768 | 8 | 224 | 1.51% |
| D-Vials | | 33 | 42,172 | 9,48,000 | 23 | 759 | 5.12% |
| E-Vials | | 38 | 28,888 | 87,468 | 4 | 152 | 1.02% |
| F-Vials | | 31 | 31,867 | 1,72,800 | 6 | 186 | 1.25% |
| G-Vials | | 35 | 28,584 | 3,04,000 | 11 | 385 | 2.60% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| H-PFS | | 46 | 66,666 | 61,34,266 | 93 | 4278 | 28.84% |
| I-PFS | | 37 | 28,301 | 3,58,400 | 13 | 481 | 3.24% |
| J-Vials | | 34 | 43,584 | 4,80,000 | 12 | 408 | 2.75% |
| Total | 14,832 | | | | | 8051 | 54.28% |

**Maximum number of hours available in a year**

| | | | |
|---|---|---|---|
| 1. | Number of days in year | | 365 |
| 2. | Less: Maintenance down time 12M*2 days (can be based on trend of Previous years) | | 24 |
| 3. | Less: Product Changeover (No of Prod. 10*4 times in year*6 hrs. cleaning) | | 10 |
| 4. | Less: Level 1 Cleaning time (No of days X 2 hours/24) or ( Based on trend of previous years) | 266 | 22 |
| 5. | No of Days Available for the year | | 309 |
| 6. | No of Hours Available for each Line (No *24) | | 7,416 |
| 7. | No of Hours Available for 2 Line | | 14,832 |
| 8. | Minimum Maximum hours available after considering +/- 3% Variation | 14,387 | 15,277 |

| **Production Capacity** | | | | | | | **Based on Hours** |
|---|---|---|---|---|---|---|---|
| A. Installed Capacity | | (365 days * 24 hrs * 2 line) | | | | Hours | 17,520 |
| B. Normal Capacity | | | | | | Hours | 15,277 |
| C. Actual Capacity | | | | | | Hours | 8,051 |
| **Capacity Utilization Percentage** | | | | | | | 52.7% |

**Note:**

* Installed Capacity can be based on Technical Evaluation also.

* Normal Capacity considered after 3% Variation.

**Annexure 5**

**Increase in capacity during the Year**

| | | |
|---|---|---|
| Accounting year | = | 1ST April 2014 to 31st March 2015 |
| Installed capacity to assemble cars<br><br>(During the year) | = | 12000 Nos |
| Capacity increased during the year<br><br>from 1st January to 31st March 2015 (for 3 months – last quarter) | = | 4000 Nos |
| Actual Car Assembled during the year | = | 12000 Nos. |
| Capacity Available during the year | = | 12000 + (4000/4) (for one quarter)<br><br>= 13000 |
| Installed capacity utilization during the year | = | 12000/13000 = 92.3 % |

**Annexure 6**

**Example of Abnormal Idle Capacity**

***Abnormal idle capacity is the difference between normal capacity and actual capacity utilization where the actual capacity is lower than the normal capacity.***

| | | |
|---|---|---|
| Manufacturer's Specifications - capacity per hour | = | 500 units |
| No. of shifts (each shift of 8 hours) | = | 3 shifts |
| **Holidays in a year:** | | |
| Sundays | = | 52 |
| Other holidays | = | 13 |
| Annual maintenance - days | = | 30 |
| Preventive weekly maintenance for the machine on Sunday. | | |
| Normal idle capacity for batch change over,Lunch,personal needs etc. | = | 1 hour per shift |
| Actual Production for the year | = | 27.5 lakhs unit |
| **CALCULATION OF CAPACITY** | | |
| Installed Capacity for the facility per annum | = | 365 * 8 *3 * 500 = 43.8 lakhs units |
| Normal Capacity | = | = (365 – 52 –13 - 30) * (8 - 1) * 3 * 500 = 28.35 lakhs units |
| Abnormal Idle Capacity = Normal Capacity – Actual Production | = | 28.35 lakhs Units- 27.5 lakhs units =0.85 lakhs units |

**Annexure 7**

## CAS – 2 (REVISED 2015)
## COST ACCOUNTING STANDARD ON CAPACITY DETERMINATION

The following is the Cost Accounting Standard - 2 (Revised 2015) on "Capacity Determination" issued by the Council of the Institute of Cost Accountants of India. This standard replaces CAS-2 (Revised 2012) on Capacity Determination. In this Standard, the standard portions have been set in ***bold italic*** type. These are to be read in the context of the background material, which has been set in normal type.

### 1. Introduction

**1.1** This standard deals with the principles and methods of determining the capacity of a facility for producing goods or providing services by an entity.

***1.2 This standard deals with the principles and methods of classification and determination of capacity of an entity for ascertainment of the cost of product or service, and the presentation and disclosure in cost statements.***

### 2. Objective

***The objective of this standard is to bring uniformity and consistency in the principles and methods of determination of capacity with reasonable accuracy.***

### 3. Scope

***This standard shall be applied to the cost statements, including those requiring attestation, which require determination of capacity for assignment of overheads.***

### 4. Definitions

The following terms are being used in this standard with the meaning specified.

***4.1 Abnormal Idle Capacity: Abnormal idle capacity is the difference between normal capacity and actual capacity utilization where the actual capacity is lower than the normal capacity.***

***4.2 Actual capacity utilization: Actual capacity utilization is measured in terms of volume of production achieved or service provided in a specified period.***

Volume may be measured in terms of units produced or services provided or equivalent machine or man hours, as applicable.

Actual capacity utilization is usually expressed as a percentage of installed capacity.

***4.3 Cost Object: An activity, contract, cost Centre, customer, product, process, project, service or any other object for which costs are ascertained.***

***4.4 Installed capacity: Installed capacity is the maximum capacity of producing goods or providing services, determined either based on technical specification of the facility or through a technical evaluation.***

***4.5 Normal Capacity: Normal capacity is the volume of production or services achieved or achievable on an average over a period under normal circumstances taking into account the reduction in capacity resulting from planned maintenance.***

***4.6 Normal Idle Capacity: Normal idle capacity is the difference between installed and normal capacity.***

***5. Determination of Capacity:***

***5.1 Capacity shall be determined in terms of units of production or services or equivalent machine or man hours.***

***5.2 Installed capacity***

***Installed capacity is usually determined based on:***

- ***ii) Technical specifications of facility.***
- ***iii) Technical evaluation.***
- ***iv) Capacities of individual or interrelated production or operation Centres.***
- ***v) Operational constraints or capacity of critical machines or equipment.***
- ***vi) Number of shifts or machine hours or man hours.***

In case technical specifications of facility are not available, the estimates by technical experts on capacity under ideal conditions shall be considered for determination of installed capacity.

In case the installed capacity is assessed as per direction of the Government or regulator it shall be in accordance with the said directives.

***5.3 Reassessment of Installed Capacity:***

***Installed capacity shall be reassessed in case of any change due to addition, deletion, modification or for any other reason from the date of such change.***

In case the installed capacity is reassessed as per direction of the Government or regulator it shall be in accordance with the said directives.

***5.4 Normal Capacity:***

***Normal capacity is determined after suitable adjustments to the Installed Capacity.***

The adjustments may be of the following nature:

(i) Time lost due to scheduled preventive or planned maintenance

(ii) Number of shifts or machine hours or man hours.

(iii) Holidays, normal shut down days, normal idle time,

(iv) Normal time lost in batch change over

***6. Presentation***

***6.1 Cost Statements shall present Installed capacity, normal capacity and actual production of goods or services provided, in absolute terms.***

***6.2 Actual Capacity utilization shall be presented as a percentage of installed capacity.***

***7. Disclosure:***

**7.1** ***The cost statements shall disclose the following*:**

***a. Basis for arriving at different types of capacity.***

***b. Changes in the installed capacity or normal capacity with reason thereof.***

***c. Capacity enhanced through outsourcing.***

***d. Capacity outsourced to others.***

***e. Details of actual production of goods or services provided.***

***a) Self-Manufactured goods or services provided through in-house facility***

***b) Goods Produced or services provided through outsourcing***

***f. Reasons for low capacity utilization.***

***g. Abnormal cost due to under-utilization of capacity.***

***7.2 Disclosures shall be made only where material, significant and quantifiable.***

***7.3 Disclosures shall be made in the body of the Cost Statement or as a foot note or as a separate schedule.***

***8. Effective date***

This Cost Accounting Standard shall be effective from the period commencing on or after 1st April 2016 for being applied for the preparation and certification of General Purpose Cost Accounting Statement.

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