

PROJECT REPORT

GUN METAL BUSHES

PURPOSE OF THE DOCUMENT

This particular pre-feasibility is regarding Gun Metal Bushes

The objective of the pre-feasibility is primarily to facilitate potential entrepreneurs' in project identification for investment and in order to serve this objective; the document covers various aspects of the project concept development, startup, marketing, and finance and business management

[We can modify the project capacity and project cost as per your requirement. We can also prepare project report on any subject as per your requirement.]

Prepared By:



Institute for Industrial development
A unit of M/S Samadhan Samiti

Email: support@iid.org.in

Phone: +91 7408733333,
+91 7607655555

GUN METAL BUSHES



INTRODUCTION:

Bush is a plain bearing surface made of a comparatively softer metal that is inserted into a housing to provide a bearing surface for rotary part in variety of applications. Since most rotating parts like shafts are made of steel, bushes or plain bearing is made of alloys viz brass and bronze which have excellent wear properties. Gunmetal is an alloy that is known for its robustness, heat resistance and anti-corrosive property.

PRODUCT & ITS APPLICATION:

Gunmetal is an alloy of copper, tin and zinc also known as bronze, which casts and machines well and is resistant to corrosion from steam and salt water and therefore it, is used to make steam and hydraulic castings, valves, gears, statues, and various small objects.

There are several types of bush bearings viz brass, bronze, self-lubricated oil, graphite etc. lubricant impregnated bearings and bi-metal and Babbitt bearings.

Bronze, Gun metal bushing, Phosphor Bronze, Aluminum Bronze, etc. are widely used in Submersible Thrust Bush and Earth Moving Bushing are manufactured using quality metal and alloys such as brass, bronze and gunmetal. To ensure quality, special compositions are chosen for bush bearings that can be either procured from local foundries or the unit can have its own foundry.

INDUSTRY OUTLOOK/TREND

Bushes for bearings in machinery of wide range are essential and supply chain has been essentially domain of small medium sector units. At present, there are more than 100 manufacturers specializing in gun metal, brass, bronze etc. metal bushes. The brass bronze and other metal product clusters are mainly located in UP, Punjab, Haryana, Pune, Bombay, Coimbatore, Hyderabad, Rajkot, Rajkot and Surendranagar. The gunmetal, brass and bronze bushes and other component castings market of world is valued at Rs 630 Billion in 2016 and is projected to reach Rs 700 Billion by 2022, at a CAGR of 2.8% between 2017 and 2022. Gun metal is a special compositions of Bronze Market, used by Industrial machinery and equipments, Marine engines and equipments, Infrastructure & Construction machinery, Automotive and stationary engines, Electrical & Electronics equipments, Aerospace & Defense, etc. Trend of new technology products to replace the brass and bronze has emerged viz graphite and PTFE lined bearings but the ease of production and compatibility of brass and bronze is not replaceable except in special applications.

MARKET POTENTIAL AND MARKETING ISSUES. IF ANY:

Bushes are extensively used for all types of machines and appliances that have rotating shafts. Starting from automobiles, tractors, earth-movers, trailers, compressors and submersible pumps to even the home appliances and industrial machines of all types need bushes. Various designs are popular viz grooved, flanged bush housing etc. sizes and shapes.

Bronze bearings & bushings, bronze casting & bushing, industrial bushing, brass bush, aluminum bronze bush, bearing bushing, submersible bronze bushes, submersible thrust bushes, earth moving bushings, etc. are wearable parts requiring frequent replacement requirements; therefore there is huge demand potential for these products. The entrepreneur can start with trade channels and tap OEM consumers for supply of select the product range.

The entrepreneur can specialize and focus on specific product range / end user segment that have good market demand in the region in which it is located.

RAW MATERIAL REQUIREMENTS:

Main raw materials are scrap or ingots of copper, brass, tin, zinc, etc. The unit is recommended with a pit furnace to cast its own castings. Other materials are in rods and bars of the readily available brass and bronze of desired compositions. The machine shop scrap will be used in furnace to produce own castings.

MANUFACTURING PROCESS:

Bushes are produced by machining from the rods and castings. The process involves cutting from rods to desired size and then machining on lathe. Grooves and other machining can also be done on lathe and milling machine.

For self-lubricating bush production bushes may be coated with FEP, PFA, PTFE (Teflon) and other metals like tin that provide better wear properties. The coating process can be done by simple ingenious spray attachments and torch processes on lathe. These coatings are sintered in small oven to get desired uniformity.

MAJOR ASSUMPTIONS

The Unit will have capacity of 60 MT of Gun metal bushes and other casting/machined products per year of assorted types/ designs. The sales prices Gun metal bushes and other products of various types range are assumed at 400/- per Kg or more depending on type, shape complexity, metal composition, and volumes. The raw material cost brass bronze scrap is assumed at Rs315/-per Kg depending on grades. The material requirements are considered with wastage/ scrap/burnouts etc. of 4 % of finished products as most of generated scrap is reused. The unusable scrap is sold at @ Rs 80 to 150 per Kg. and the income of same is added. Energy Costs are considered at Rs 7 per Kwh and fuel cost is considered at Rs. 65 per liter. The depreciation of plant is taken at 15 % and Interest costs are taken at 11.50 % depending on type of industry.

PROJECT AT A GLANCE

- 1 Name of the Entrepreneur : XXXXXXXX
- 2 Constitution (legal Status) : XXXXXXXX
- 3 Father's/Spouce's Name : XXXXXXXX
- 4 Unit Address : XXXXXXXX
- Taluk/Block: XXXXX
 District : XXXXX
 Pin: XXXXX State:
 E-Mail : XXXXX
 Mobile XXXXX
- 5 Product and By Product : **Gun Metal Bushes**
- 6 Name of the project / business activity proposed : **Gun Metal Bushes**
- 7 Cost of Project : Rs25lac
- 8 Means of Finance
 Term Loan Rs.10.47 Lacs
 KVIC Margin Money - As per Project Eligibility
 Own Capital Rs.2.5 Lacs
 Working Capital Rs.12.03 Lacs
- 9 Debt Service Coverage Ratio : 6.75
- 10 Pay Back Period : 5 Years
- 11 Project Implementation Period : 8 Months
- 12 Break Even Point : 22%
- 13 Employment : 9 Persons
- 14 Power Requirement : 25.00 HP
- 15 Major Raw materials : **Bronze alloy**
- 16 Estimated Annual Sales Turnover : 136.80 Lacs
- 16 Detailed Cost of Project & Means of Finance

COST OF PROJECT

(Rs. In Lacs)

Particulars	Amount
Land	Rented/Owned
Building & Civil Work (2000 Sq Ft)	4.63
Plant & Machinery	5.50
Furniture & Fixtures	0.60
Pre-operative Expenses	0.90
Working Capital Requirement	13.37
Total	25.00

MEANS OF FINANCE

Particulars	Amount
Own Contribution @10%	2.50
Term Loan	10.47
Workign Capital Finance	12.03
Total	25.00

Beneficiary's Margin Monery
 (% of Project Cost)

General	Special
10%	5%

PLANT & MACHINERY

PARTICULARS	QTY.	RATE	AMOUNT IN RS.
Pit Furnace complete with burners, blowers	1	250,000.00	250,000.00
Band saw machine	1.00	60,000.00	60,000.00
Lathes	2.00	75,000.00	150,000.00
Torches, coating etc. attachments	2.00	12,000.00	24,000.00
Curing oven	1.00	25,000.00	25,000.00
Bench and Belt Grinders	1.00	25,000.00	25,000.00
Gauges and Tools	1.00	16,000.00	16,000.00
Total			550,000.00

PROJECTED BALANCE SHEET

PARTICULARS	IST YEAR	IIND YEAR	IIRD YEAR	IVTH YEAR	VTH YEAR
<u>SOURCES OF FUND</u>					
Capital Account	2.50	2.50	2.50	2.50	2.50
Retained Profit	14.21	31.34	49.86	71.57	96.38
Term Loan	10.47	7.85	5.23	2.62	0.21
Cash Credit	12.03	12.03	12.03	12.03	12.03
Sundry Creditors	2.54	2.96	3.39	3.81	4.23
Provisions & Other Liab	0.36	0.40	0.44	0.48	0.53
TOTAL :	42.11	57.08	73.44	93.01	115.88

APPLICATION OF FUND

Fixed Assets (Gross)	10.73	10.73	10.73	10.73	10.73
Gross Dep.	1.32	2.49	3.52	4.41	5.18
Net Fixed Assets	9.41	8.24	7.21	6.32	5.55
Current Assets					
Sundry Debtors	4.71	5.73	6.55	7.38	8.20
Stock in Hand	11.20	13.07	14.94	16.80	18.67
Cash and Bank	14.29	27.29	41.71	59.17	79.80
Deposits & Advances	2.50	2.75	3.03	3.33	3.66
TOTAL :	42.11	57.08	73.44	93.01	115.88

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PROJECTED PROFITABILITY STATEMENT

PARTICULARS	IST YEAR	IIND YEAR	IIIRD YEAR	IVTH YEAR	VTH YEAR
<u>A) SALES</u>					
Gross Sale	136.80	166.80	190.80	214.80	238.80
Scrap sale	4.35	5.08	5.81	6.53	7.26
Total (A)	141.15	171.88	196.61	221.33	246.06
<u>B) COST OF SALES</u>					
Raw Mateiral Consumed	108.86	127.01	145.15	163.30	181.44
Elecricity Expenses	4.30	5.02	5.74	6.45	7.17
Repair & Maintenance	-	1.67	1.91	2.15	2.39
Labour & Wages	4.75	5.23	5.75	6.32	6.96
Depriciation	1.32	1.17	1.02	0.89	0.78
Consumables and Other Expense	2.82	3.44	3.93	4.43	4.92
Cost of Production	122.06	143.53	163.50	183.54	203.65
Add: Opening Stock /WIP	-	5.76	6.72	7.68	8.64
Less: Closing Stock /WIP	5.76	6.72	7.68	8.64	9.60
Cost of Sales (B)	116.30	142.57	162.54	182.58	202.69
<u>C) GROSS PROFIT (A-B)</u>					
	24.86	29.31	34.07	38.75	43.37
	18%	18%	18%	18%	18%
D) Bank Interest (Term Loan)	0.90	1.09	0.79	0.49	0.19
Bank Interest (C.C. Limit)	1.20	1.20	1.20	1.20	1.20
E) Salary to Staff	4.22	4.65	5.11	5.62	6.18
F) Selling & Adm Expenses Exp.	2.74	3.34	3.82	4.30	4.78
TOTAL (D+E)	9.07	10.28	10.92	11.61	12.35
H) NET PROFIT	15.79	19.03	23.15	27.14	31.01
I) Taxation	1.58	1.90	4.63	5.43	6.20
J) PROFIT (After Tax)	14.21	17.13	18.52	21.71	24.81

PROJECTED CASH FLOW STATEMENT

PARTICULARS	IST YEAR	IIND YEAR	IIIRD YEAR	IVTH YEAR	VTH YEAR
<u>SOURCES OF FUND</u>					
Share Capital	2.50	-	-	-	-
Reserve & Surplus	15.79	19.03	23.15	27.14	31.01
Depriciation & Exp. W/off	1.32	1.17	1.02	0.89	0.78
Increase in Cash Credit	12.03	-	-	-	-
Increase In Term Loan	10.47	-	-	-	-
Increase in Creditors	2.54	0.42	0.42	0.42	0.42
Increase in Provisions	0.36	0.04	0.04	0.04	0.05
TOTAL :	45.01	20.66	24.63	28.50	32.26
<u>APPLICATION OF FUND</u>					
Increase in Fixed Assets	10.73	-	-	-	-
Increase in Stock	11.20	1.87	1.87	1.87	1.87
Increase in Debtors	4.71	1.02	0.82	0.82	0.82
Increase in Deposits & Adv	2.50	0.25	0.28	0.30	0.33
Repayment of Term Loan	-	2.62	2.62	2.62	2.41
Taxation	1.58	1.90	4.63	5.43	6.20
TOTAL :	30.72	7.66	10.21	11.04	11.63
Opening Cash & Bank Balance	-	14.29	27.29	41.71	59.17
Add : Surplus	14.29	13.00	14.42	17.46	20.62
Closing Cash & Bank Balance	14.29	27.29	41.71	59.17	79.80

COMPUTATION OF MANUFACTURING OF Gun Metal Bushes

Items to be Manufactured

G.M. Bushes

Manufacturing Capacity per day	-	0.20	MT
	-		
No. of Working Hour		8	
No of Working Days per month		25	
No. of Working Day per annum		300	
Total Production per Annum		60.00	MT
Year		Capacity	Ltrs
		Utilisation	
IST YEAR		60%	36
IIND YEAR		70%	42
IIIRD YEAR		80%	48
IVTH YEAR		90%	54
VTH YEAR		100%	60

COMPUTATION OF RAW MATERIAL

Item Name		Quantity of Raw Material MT	Recovery	Unit Rate of / MT	Total Cost Per Annum (100%)
scrap or ingots of copper, brass, tin, zinc, etc	100%	60.00	96%	315,000.00	181.44
Total (Rounded off in lacs)					181.44
Annual Consumption cost	(In Lacs)				181.44

Raw Material Consumed	Capacity Utilisation	Amount (Rs.)	Scrap sale 4% Rs150/per kg	Rate
IST YEAR	60%	108.86	4.35	4.35
IIND YEAR	70%	127.01	5.08	5.08
IIIRD YEAR	80%	145.15	5.81	5.81
IVTH YEAR	90%	163.30	6.53	6.53
VTH YEAR	100%	181.44	7.26	7.26

COMPUTATION OF CLOSING STOCK & WORKING CAPITAL

PARTICULARS	IST YEAR	IIND YEAR	IIIRD YEAR	IVTH YEAR	VTH YEAR
<u>Finished Goods</u>					
(15 Days requirement)	5.76	6.72	7.68	8.64	9.60
<u>Raw Material</u>					
(15 Days requirement)	5.44	6.35	7.26	8.16	9.07
Closing Stock	11.20	13.07	14.94	16.80	18.67

COMPUTATION OF WORKING CAPITAL REQUIREMENT

Particulars			Total Amount
Stock in Hand			11.20
Sundry Debtors			4.71
		Total	15.91
Sundry Creditors			2.54
Working Capital Requirement			13.37
Margin			1.34
Working Capital Finance			12.03

BREAK UP OF LABOUR

Particulars		Wages Per Month	No of Employees	Total Salary
Skilled Worker		8,000.00	2	16,000.00
Unskilled Worker		5,000.00	4	20,000.00
				36,000.00
Add: 10% Fringe Benefit				3,600.00
Total Labour Cost Per Month				39,600.00
Total Labour Cost for the year (In Rs. Lakhs)				4.75

6.00

BREAK UP OF SALARY

Particulars		Salary Per Month	No of Employees	Total Salary
Manager		12,000.00	1	12,000.00
Accountant		8,000.00	1	8,000.00
Sales		12,000.00	1	12,000.00
Total Salary Per Month				32,000.00
Add: 10% Fringe Benefit				3,200.00
Total Salary for the month				35,200.00
Total Salary for the year (In Rs. Lakhs)				4.22

3.00

COMPUTATION OF DEPRECIATION

Description	Land	Building/shed	Plant & Machinery	Furniture	TOTAL
Rate of Depreciation		10.00%	15.00%	10.00%	
Opening Balance	Leased	-	-	-	-
Addition	-	4.63	5.50	0.60	10.73
	-	4.63	5.50	0.60	10.73
Less : Depreciation	-	0.46	0.83	0.03	1.32
WDV at end of Ist year	-	4.17	4.68	0.57	9.41
Additions During The Year	-	-	-	-	-
	-	4.17	4.68	0.57	9.41
Less : Depreciation	-	0.42	0.70	0.06	1.17
WDV at end of IIInd Year	-	3.75	3.97	0.51	8.24
Additions During The Year	-	-	-	-	-
	-	3.75	3.97	0.51	8.24
Less : Depreciation	-	0.38	0.60	0.05	1.02
WDV at end of IIIrd year	-	3.38	3.38	0.46	7.21
Additions During The Year	-	-	-	-	-
	-	3.38	3.38	0.46	7.21
Less : Depreciation	-	0.34	0.51	0.05	0.89
WDV at end of IV year	-	3.04	2.87	0.42	6.32
Additions During The Year	-	-	-	-	-
	-	3.04	2.87	0.42	6.32
Less : Depreciation	-	0.30	0.43	0.04	0.78
WDV at end of Vth year	-	2.73	2.44	0.37	5.55

REPAYMENT SCHEDULE OF TERM LOAN

11.5%

Year	Particulars	Amount	Addition	Total	Interest	Repayment	CI Balance
IST YEAR	Opening Balance						
	Ist Quarter	-	10.47	10.47	-	-	10.47
	Iind Quarter	10.47	-	10.47	0.30	-	10.47
	IIIrd Quarter	10.47	-	10.47	0.30	-	10.47
	Ivth Quarter	10.47	-	10.47	0.30	-	10.47
					0.90	-	
IIND YEAR	Opening Balance						
	Ist Quarter	10.47	-	10.47	0.30	0.65	9.81
	Iind Quarter	9.81	-	9.81	0.28	0.65	9.16
	IIIrd Quarter	9.16	-	9.16	0.26	0.65	8.50
	Ivth Quarter	8.50	-	8.50	0.24	0.65	7.85
					1.09	2.62	
IIIRD YEAR	Opening Balance						
	Ist Quarter	7.85	-	7.85	0.23	0.65	7.20
	Iind Quarter	7.20	-	7.20	0.21	0.65	6.54
	IIIrd Quarter	6.54	-	6.54	0.19	0.65	5.89
	Ivth Quarter	5.89	-	5.89	0.17	0.65	5.23
					0.79	2.62	
IVTH YEAR	Opening Balance						
	Ist Quarter	5.23	-	5.23	0.15	0.65	4.58
	Iind Quarter	4.58	-	4.58	0.13	0.65	3.93
	IIIrd Quarter	3.93	-	3.93	0.11	0.65	3.27
	Ivth Quarter	3.27	-	3.27	0.09	0.65	2.62
					0.49	2.62	
VTH YEAR	Opening Balance						
	Ist Quarter	2.62	-	2.62	0.08	0.65	1.96
	Iind Quarter	1.96	-	1.96	0.06	0.65	1.31
	IIIrd Quarter	1.31	-	1.31	0.04	0.55	0.76
	Ivth Quarter	0.76	-	0.76	0.02	0.55	0.21
					0.19	2.41	

CALCULATION OF D.S.C.R

PARTICULARS	IST YEAR	IIND YEAR	IIIRD YEAR	IVTH YEAR	VTH YEAR
<u>CASH ACCRUALS</u>	15.53	18.30	19.54	22.61	25.59
Interest on Term Loan	0.90	1.09	0.79	0.49	0.19
Total	16.43	19.39	20.33	23.09	25.78
<u>REPAYMENT</u>					
Instalment of Term Loan	2.62	2.62	2.62	2.41	2.41
Interest on Term Loan	0.90	1.09	0.79	0.49	0.19
Total	3.52	3.71	3.41	2.90	2.60
DEBT SERVICE COVERAGE R	4.67	5.23	5.97	7.97	9.92
AVERAGE D.S.C.R.			6.75		

COMPUTATION OF SALE

Particulars	IST YEAR	IIND YEAR	IIIRD YEAR	IVTH YEAR	VTH YEAR
Op Stock	-	2	2	2	3
Production	36	42	48	54	60
Less : Closing Stock	36	44	50	56	63
	2	2	2	3	3
Net Sale	34	42	48	54	60
Sale Price per MT	400,000.00	400,000.00	400,000.00	400,000.00	400,000.00
Sale (in Lacs)	136.80	166.80	190.80	214.80	238.80

COMPUTATION OF ELECTRICITY

(A) POWER CONNECTION				
Total Working Hour per day		Hours	8	
Electric Load Required		HP	25	
Load Factor			0.7460	
Electricity Charges		per unit	8.00	
Total Working Days			300	
Electricity Charges (8 Hrs Per day)				358,080.00
Add : Minimim Charges (@ 10%)				
(B) D.G. SET				
No. of Working Days			300	days
No of Working Hours			2	Hour per day
Total no of Hour			600	
Diesel Consumption per Hour			8	
Total Consumption of Diesel			4,800	
Cost of Diesel			65.00	Rs. /Ltr
Total cost of Diesel			3.12	
Add : Lube Cost @15%			0.47	
Total			3.59	
Total cost of Power & Fuel at 100%				7.17
Year		Capacity		Amount (in Lacs)
IST YEAR		60%		4.30
IIND YEAR		70%		5.02
IIIRD YEAR		80%		5.74
IVTH YEAR		90%		6.45
VTH YEAR		100%		7.17

BREAK EVEN POINT ANALYSIS

Year	I	II	III	IV	V
Net Sales & Other Income	141.15	171.88	196.61	221.33	246.06
Less : Op. WIP Goods	-	5.76	6.72	7.68	8.64
Add : Cl. WIP Goods	5.76	6.72	7.68	8.64	9.60
Total Sales	146.91	172.84	197.57	222.29	247.02
Variable & Semi Variable Exp.					
Raw Material & Tax	108.86	127.01	145.15	163.30	181.44
Electricity Exp/Coal Consumption at 85%	3.66	4.27	4.87	5.48	6.09
Manufacturing Expenses 80%	2.26	4.08	4.67	5.26	5.85
Wages & Salary at 60%	5.39	5.92	6.52	7.17	7.89
Selling & administrative Expenses 80%	2.19	2.67	3.05	3.44	3.82
Intt. On Working Capital Loan	1.20	1.20	1.20	1.20	1.20
Total Variable & Semi Variable Exp	123.56	145.15	165.47	185.85	206.29
Contribution	23.36	27.69	32.09	36.44	40.73
Fixed & Semi Fixed Expenses					
Manufacturing Expenses 20%	0.56	1.02	1.17	1.31	1.46
Electricity Exp/Coal Consumption at 15%	0.65	0.75	0.86	0.97	1.08
Wages & Salary at 40%	3.59	3.95	4.34	4.78	5.26
Interest on Term Loan	0.90	1.09	0.79	0.49	0.19
Depreciation	1.32	1.17	1.02	0.89	0.78
Selling & administrative Expenses 20%	0.55	0.67	0.76	0.86	0.96
Total Fixed Expenses	7.57	8.66	8.95	9.30	9.72
Capacity Utilization	60%	70%	80%	90%	100%
OPERATING PROFIT	15.79	19.03	23.15	27.14	31.01
BREAK EVEN POINT	19%	22%	22%	23%	24%
BREAK EVEN SALES	47.60	54.04	55.08	56.73	58.93

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