

UP MSME 1-Connect

PROJECT REPORT

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PROJECT:

WATER FILTER CARTRIDGE MANUFACTURING
UNIT

**PROJECT REPORT
OF
WATER FILTER CARTRIDGE
MANUFACTURING UNIT
PURPOSE OF THE DOCUMENT**

This particular pre-feasibility is regarding Water Filter Cartridge.

The objective of the pre-feasibility report is primarily to facilitate potential entrepreneurs in project identification for investment and in order to serve his objective; the document covers various aspects of the project concept development, start-up, marketing, finance and 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.]

PROJECT AT GLANCE

- 1 **Name of Proprietor/Director** XXXXXXXX
- 2 **Firm Name** XXXXXXXX
- 3 **Registered Address** XXXXXXXX
- 4 **Nature of Activity** XXXXXXXX
- 5 **Category of Applicant** XXXXXXXX
- 6 **Location of Unit** XXXXXXXX
- 7 **Cost of Project** 14.33 Rs. In Lakhs
- 8 **Means of Finance**
- i) **Own Contribution** 1.43 Rs. In Lakhs ii) **Term Loan** 9.90 Rs. In Lakhs
- iii) **Working Capital** 3.00 Rs. In Lakhs
- 9 **Debt Service Coverage Ratio** 3.07
- 10 **Break Even Point** 0.30
- 11 **Power Requirement** 25 KW
- 12 **Employment** 6 Persons

- 13 **Major Raw Materials** Cold rolled steel (CRC) sheets, Electrode,
Locks, Handle, Electrode (Circular).

14 **Details of Cost of Project & Means of Finance**

Cost of Project

| Particulars | Amount in Lacs |
|-----------------------------|----------------|
| Land | Owned/Leased |
| Building & Civil Work | Owned/Leased |
| Plant & Machinery | 9.50 |
| Furniture & Fixture | 0.50 |
| Other Misc Assets | 1.00 |
| Working Capital Requirement | 3.33 |
| Total | 14.33 |

Means of Finance

| Particulars | Amount in Lacs |
|----------------------|----------------|
| Own Contribution | 1.43 |
| Term Loan | 9.90 |
| Working capital Loan | 3.00 |
| Total | 14.33 |

WATER FILTER CARTRIDGE

1. INTRODUCTION



According to World Health Organization (WHO) over 99.8% of death caused by poor quality of drinking water in the developing countries strongly suggesting a need of safe (free from physical, chemical and biological contaminations) and adequate amount of drinking water. In order to improve water quality, various water treatment techniques (bio sand filter, ceramic filters, boiling water, solar disinfection) are in common practice at household level of many developing countries where centralized water treatment systems are limited. Among many options for household water treatment methods, ceramic filter Cartridge are one of the promising techniques for the developing countries. The fact is that ceramic filter cartridge can be manufactured by local ceramists using locally available materials that not only make it affordable but also make it an attractive point-of- use treatment technology. Moreover, this type of filter can be used in different forms such as cartridge, pot and disc. It physically eliminates colloidal particles (which make water turbid), odour and microorganisms including pathogens. Performance of this filter is normally evaluated based on water flow rate, removal of pathogens, reduction on chemical contaminants including turbidity and odour. Ceramic water filters have been used in various places around the world as a means of treating drinking water at the household level. Some examples include the Potters for Peace Filtron (Nicaragua), the TERAFIL terracotta filter (India), and the cartridge filter (India, Nepal, Bangladesh, Brazil, etc).

Ceramic water filters can be categorized according to various key parameters:

1. Shape (e.g.: cartridge element, disk, pot)
2. Type of clay (e.g.: white kaolin, red terracotta, black clay, etc)
3. Combustible material (e.g. : sawdust, flour, rice husk, etc).

Types of Ceramic Water Filter Elements Ceramic water filters can also be described by their functions:

1. Microbial removal (e.g.: Potters for Peace Filtron)

2. Chemical contaminant removal such as arsenic and iron (e.g.:Kolshi Filter for arsenic)
3. Secondary contaminant removal like taste and odor (e.g: Katadyn Gravidyn ceramic cartridge filter with activated carbon).

Other key variables that influence the properties of ceramic water filters include:

1. Use of additional materials in production (e.g.: grog, sand, Combustible materials,)
2. Firing temperature
3. Mode of production (e.g.: hand mold, wheel, mechanical press). The entire unit is often defined in terms of two components , the filter element or media through which water passes and the filter system which houses the media, usually consisting of an upper and lower storage vessel for holding water.

2. MARKET POTENTIAL

Cartridge filters can be manufactured at a local level and contribute to the development of local commerce. Local production process provides financial supports to household and voluntary labours. However, the production of ceramic filters is a lengthy process and a quality control process is required to ensure cartridge filter 's effectiveness. Quality can be affected by variations in clay composition across geographic regions. Variability in weather conditions also makes long-term production planning difficult, and lack of storage can complicate storage of filters. The fragility of ceramic filters can make their transport difficult. Supply chain and market availability for replacement of cartridges and taps is required. Filters typically come with illustrated instructions in market.

The filter cartridges are mostly imported although few firms are manufacturing these items in Calcutta, Madras, Karnataka, Hyderabad and Delhi. There is not even a single unit in Bihar. The demand of this item is being met from manufactures of Calcutta. The total estimated annual requirement if 12 lakhs against the present status 7 lakhs. The demand may likely to increase further due to the civilized living standards, consciousness hygiene among the common people and also in the replacement of the used cartridges.

3. PRODUCT DESCRIPTION

3.1 PRODUCT USES

Ceramic cartridges used for water filtering are tubular porous ceramic products closed at the top and fitted with metal l part at the bottom and with opening. For filtering water to get it bacteria free, ceramic water filter cartridges are widely used. These are made of various ceramic raw materials like china clay, alumina, quartz, feldspar and combustible materials. A among the two varieties in use are

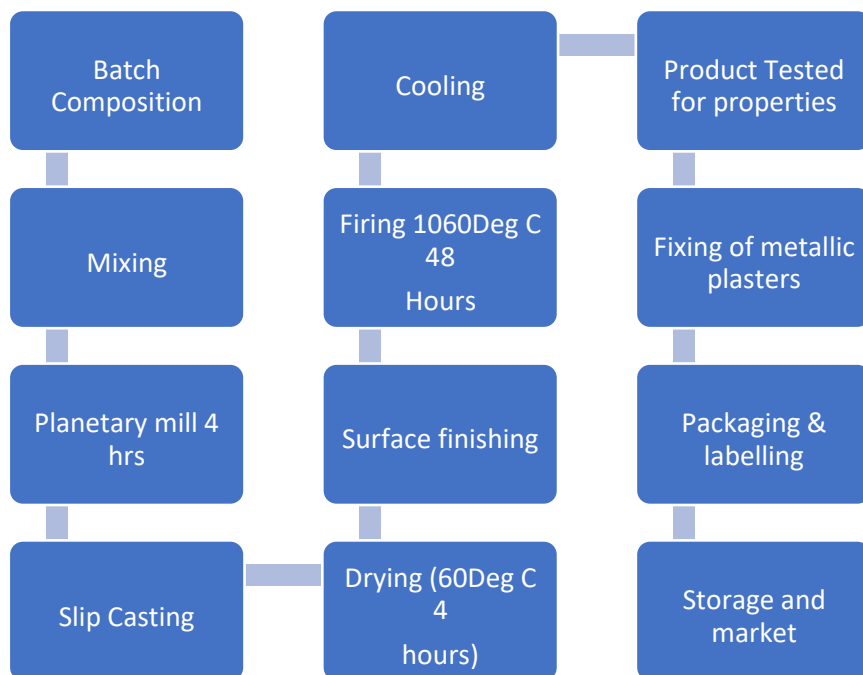
- (i) cartridges which gives bacteria free water and
- (ii) the other gives water free from suspended impurities.

As per rate of filtration the cartridges are classified as domestic type and community type in which rate of filtration is 2 to 3 litres per hour and 6 to 7 litres per hour respectively.

3.1 RAW MATERIAL REQUIREMENT

- Calcine alumina powder-Ind.
- China clay-Ind
- Coal dust-Ind
- Felspar powder (200 mesh) – Ind.
- Fire clay – Ind.
- Metal parts – Ind.
- Packing material
- Quartz powder (200 mesh)
- Than clay

3.2 MANUFACTURING PROCESS



4. PROJECT COMPONENTS

PLANT & MACHINERY

| Sl. No. | Name of the machineries |
|---------|---|
| 1. | Agitator cement tank capacity1000lit.with accessories & motor |
| 2. | Ball Mill 4`x 4` with accessories and motor |
| 3. | Blunger vat 1000 lit capacity with motor |
| 4. | Electrical drying over 6` x 6` x 3` |
| 5. | Grinding machines with motor |
| 6. | Oil-fired rectangular/ DD one tone capacity kiln |
| 7. | Plaster of Paris moulds (500*50) |
| 8. | Testing Lab Equipment's |
| 9. | Other Equipment's |

| <u>PROJECTED PROFITABILITY STATEMENT</u> | | | | | | (in Lacs) |
|---|-----------------|-----------------|-----------------|-----------------|-----------------|-----------|
| PARTICULARS | 1st year | 2nd year | 3rd year | 4th year | 5th year | |
| Capacity Utilisation % | 40% | 45% | 50% | 55% | 60% | |
| <u>SALES</u> | | | | | | |
| Gross Sale | | | | | | |
| Water Filter Cartridge | 4 5.60 | 5 6.39 | 6 5.67 | 7 6.21 | 8 7.47 | |
| Total | 4 5.60 | 5 6.39 | 6 5.67 | 7 6.21 | 8 7.47 | |
| <u>COST OF SALES</u> | | | | | | |
| Raw Material Consumed | | | | | | |
| Electricity Expenses 2 | 6.40 3 | 1.32 | 3 6.60 4 | 2.24 | 4 8.24 | |
| Depreciation | 1.92 | 2.27 | 2.52 | 2.77 | 3.02 | |
| Wages & labour | 1.63 | 1.38 | 1.18 | 1.00 | 0.85 | |
| Repair & maintenance | 5.04 | 5.54 | 6.21 | 7.14 | 8.00 | |
| Packaging & Consumables | 1.37 | 1.97 | 2.30 | 2.67 | 3.06 | |
| Cost of Production | 2.19 | 2.82 | 3.28 | 3.81 | 4.37 | |
| Add: Opening Stock 3 | 8.54 4 | 5.31 | 5 2.09 5 | 9.63 | 6 7.55 | |
| Less: Closing Stock | - | 1.93 | 2.27 | 2.60 | 2.98 | |
| Cost of Sales | 1.93 | 2.27 | 2.60 | 2.98 | 3.38 | |
| GROSS PROFIT | 3 6.61 | 4 4.97 | 5 1.75 | 5 9.26 | 6 7.16 | |
| | 8.99 | 1 1.41 | 1 3.92 | 1 6.95 | 2 0.32 | |
| Salary to Staff | 19.70% | 20.24% | 21.20% | 22.25% | 23.23% | |
| Interest on Term Loan | 1.44 | 1.51 | 1.59 | 1.67 | 1.75 | |
| Interest on working capital | 0.97 | 0.86 | 0.62 | 0.37 | 0.13 | |
| Rent | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | |
| Selling & Administrative Exp. | 3.00 | 3.45 | 3.97 | 4.56 | 5.25 | |
| | 0.46 | 1.13 | 1.31 | 1.52 | 2.19 | |
| TOTAL | 6.20 | 7.28 | 7.81 | 8.46 | 9.65 | |
| NET PROFIT | 2.79 | 4.14 | 6.11 | 8.50 | 1 0.67 | |
| Taxation | 0.01 | 0.08 | 0.24 | 0.52 | 0.88 | |
| PROFIT (After Tax) | 2.77 | 4.06 | 5.87 | 7.97 | 9.79 | |
| NET PROFIT RATIO | 6.08% | 7.19% | 8.94% | 10.46% | 11.19% | |

| <u>PROJECTED BALANCE SHEET</u> | | | | | | (in Lacs) |
|---------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------|
| PARTICULARS | 1st year | 2nd year | 3rd year | 4th year | 5th year | |
| <u>Liabilities</u> | | | | | | |
| Capital | | | | | | 9.60 |
| Opening balance | | | 3.21 | 4.76 | 7.13 | |
| Add:- | 1.43 | | | | 9.79 | |
| Own Capital | 2.77 | 4.06 | 5.87 | 7.97 | | |
| | 1.00 | 2.50 | 3.50 | 5.50 | 7.50 | |

| | | | | | |
|------------------------------|--------------|--------------|--------------|--------------|--------------|
| Add:- Retained Profit | 3.21 | 4.76 | 7.13 | 9.60 | |
| Less:- Drawings | | | | | 11.89 |
| | 8.80 | 6.60 | 4.40 | 2.20 | |
| Closing Balance | 3.00 | 3.00 | 3.00 | 3.00 | - |
| Term Loan | 1.06 | 1.25 | 1.46 | 1.69 | |
| Working Capital Limit | 1.00 | 1.40 | 1.68 | 2.02 | 3.00 |
| Sundry Creditors | | | | | |
| Provisions & Other Liability | | | | | 1.93 |
| | | | | | 2.42 |
| TOTAL : | 17.06 | 17.01 | 17.68 | 18.51 | 19.24 |
| <u>Assets</u> | | | | | |
| Fixed Assets (| | | | | 11.00 |
| Gross) Gross | | | | | |
| Dep. | | | | | 6.05 |
| Net Fixed Assets | | | | | 4.95 |
| Current | | | | | |
| Assets | 11.00 | 11.00 | 11.00 | 11.00 | |
| Sundry | 1.63 | 3.01 | 4.19 | 5.19 | |
| Debtors | 9.38 | 7.99 | 6.81 | 5.81 | 2.92 |
| Stock in | | | | | |
| Hand | 1.52 | 1.88 | 2.19 | 2.54 | 5.79 |
| Cash and Bank | 3.25 | 3.83 | 4.43 | 5.09 | 4.58 |
| Loans & Advances | 2.42 | 2.81 | 3.49 | 4.32 | |
| | 0.50 | 0.50 | 0.75 | 0.75 | 1.00 |
| TOTAL : | 17.06 | 17.01 | 17.68 | 18.51 | 19.24 |

- - - - -

| <u>PROJECTED CASH FLOW STATEMENT</u> | | | | | (in Lacs) |
|---|-----------------|-----------------|-----------------|-----------------|------------------|
| PARTICULARS | 1st year | 2nd year | 3rd year | 4th year | 5th year |
| <u>SOURCES OF FUND</u> | | | | | |
| Own Margin | 1 .43 | | | | |
| Net Profit | 2 .79 | | | | |
| Depreciation & Exp. W/off | 1 .63 | 4.14 | 6 .11 | 8.50 | 1 0.67 |
| Increase in Cash Credit | 3 .00 | 1.38 | 1 .18 | 1.00 | 0.85 |
| Increase In Term Loan | 9 .90 | - | - | - | - |
| Increase in Creditors | 1 .06 | - | - | - | - |
| Increase in Provisions & Oth labilities | 1 .00 | 0.20 | 0 .21 | 0.23 | 0.24 |
| | - | 0.40 | 0 .28 | 0.34 | 0.40 |
| TOTAL : | 2 0.80 | 6.12 | 7 .78 | 10.06 | 1 2.17 |

| <u>APPLICATION OF FUND</u> | 1 | | | | |
|-----------------------------------|--------------|-------------|-------------|-------------|--------------|
| Increase in Fixed Assets | 1.00 | | | | |
| Increase in Stock | 3.25 | 0.58 | 0.60 | 0.66 | 0.70 |
| Increase in Debtors | 1.52 | 0.36 | 0.31 | 0.35 | 0.38 |
| Repayment of Term Loan | 1.10 | 2.20 | 2.20 | 2.20 | 2.20 |
| Increase in Loans & Advances | 0.50 | - | 0.25 | - | 0.25 |
| Drawings | 1.00 | 2.50 | 3.50 | 5.50 | 7.50 |
| Taxation | 0.01 | 0.08 | 0.24 | 0.52 | 0.88 |
| TOTAL : | 18.38 | 5.73 | 7.10 | 9.24 | 11.91 |
| Opening Cash & Bank Balance | - | 2.42 | 2.81 | 3.49 | 4.32 |
| Add : Surplus | 2.42 | 0.39 | 0.68 | 0.83 | 0.27 |
| Closing Cash & Bank Balance | 2.42 | 2.81 | 3.49 | 4.32 | 4.58 |

| <u>CALCULATION OF D.S.C.R</u> | | | | | |
|--------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | | | | |
| PARTICULARS | 1st year | 2nd year | 3rd year | 4th year | 5th year |
| | | | | | |
| CASH ACCRUALS | 4.40 | 5.44 | 7.05 | 8.98 | 10.64 |
| Interest on Term Loan | 0.97 | 0.86 | 0.62 | 0.37 | 0.13 |
| Total | 5.37 | 6.30 | 7.66 | 9.35 | 10.77 |
| | | | | | |
| <u>REPAYMENT</u> | | | | | |
| Instalment of Term Loan | 1.10 | 2.20 | 2.20 | 2.20 | 2.20 |
| Interest on Term Loan | 0.97 | 0.86 | 0.62 | 0.37 | 0.13 |
| | | | | | |
| Total | 2.07 | 3.06 | 2.82 | 2.57 | 2.33 |
| | | | | | |
| DEBT SERVICE COVERAGE RATIO | 2.59 | 2.06 | 2.72 | 3.63 | 4.62 |
| AVERAGE D.S.C.R. | 3 .07 | | | | |

| REPAYMENT SCHEDULE OF TERM LOAN | | | | | | | |
|---------------------------------|-----------------|--------|----------|-------|-------------|-------------|-----------------|
| | | | | | | Interest | 11.00% |
| Year | Particulars | Amount | Addition | Total | Interest | Repayment | Closing Balance |
| 1st | Opening Balance | | | | | | |
| | 1st month | - | 9.90 | 9 .90 | - | - | 9.90 |
| | 2nd month | 9.90 | - | 9 .90 | 0.09 | - | 9.90 |
| | 3rd month | 9.90 | - | 9 .90 | 0.09 | - | 9.90 |
| | 4th month | 9.90 | - | 9 .90 | 0.09 | - | 9.90 |
| | 5th month | 9.90 | - | 9 .90 | 0.09 | - | 9.90 |
| | 6th month | 9.90 | - | 9 .90 | 0.09 | - | 9.90 |
| | 7th month | 9.90 | - | 9 .90 | 0.09 | 0.18 | 9.72 |
| | 8th month | 9.72 | - | 9 .72 | 0.09 | 0.18 | 9.53 |
| | 9th month | 9.53 | - | 9 .53 | 0.09 | 0.18 | 9.35 |
| | 10th month | 9.35 | - | 9 .35 | 0.09 | 0.18 | 9.17 |
| | 11th month | 9.17 | - | 9 .17 | 0.08 | 0.18 | 8.98 |
| | 12th month | 8.98 | - | 8 .98 | 0.08 | 0.18 | 8.80 |
| | | | | | 0.97 | 1.10 | |
| 2nd | Opening Balance | | | | | | |
| | 1st month | 8.80 | - | 8 .80 | 0.08 | 0.18 | 8.62 |
| | 2nd month | 8.62 | - | 8.62 | 0.08 | 0.18 | 8.43 |
| | 3rd month | 8.43 | - | 8 .43 | 0.08 | 0.18 | 8.25 |
| | 4th month | 8.25 | - | 8 .25 | 0.08 | 0.18 | 8.07 |
| | 5th month | 8.07 | - | 8 .07 | 0.07 | 0.18 | 7.88 |
| | 6th month | 7.88 | - | 7 .88 | 0.07 | 0.18 | 7.70 |
| | 7th month | 7.70 | - | 7 .70 | 0.07 | 0.18 | 7.52 |
| | 8th month | 7.52 | - | 7 .52 | 0.07 | 0.18 | 7.33 |

| | | | | | | |
|----------------------------|------|---|-------|-------------|-------------|------|
| 9th month | 7.33 | - | 7 .33 | 0.07 | 0.18 | 7.15 |
| 10th month | 7.15 | - | 7 .15 | 0.07 | 0.18 | 6.97 |
| 11th month | 6.97 | - | 6 .97 | 0.06 | 0.18 | 6.78 |
| 12th month | 6.78 | - | 6 .78 | 0.06 | 0.18 | 6.60 |
| | | | | 0.86 | 2.20 | |
| 3rd Opening Balance | | | | | | |
| 1st month | 6.60 | - | 6 .60 | 0.06 | 0.18 | 6.42 |
| 2nd month | 6.42 | - | 6 .42 | 0.06 | 0.18 | 6.23 |
| 3rd month | 6.23 | - | 6 .23 | 0.06 | 0.18 | 6.05 |
| 4th month | 6.05 | - | 6 .05 | 0.06 | 0.18 | 5.87 |
| 5th month | 5.87 | - | 5 .87 | 0.05 | 0.18 | 5.68 |
| 6th month | 5.68 | - | 5 .68 | 0.05 | 0.18 | 5.50 |
| 7th month | 5.50 | - | 5 .50 | 0.05 | 0.18 | 5.32 |
| 8th month | 5.32 | - | 5 .32 | 0.05 | 0.18 | 5.13 |
| 9th month | 5.13 | - | 5 .13 | 0.05 | 0.18 | 4.95 |
| 10th month | 4.95 | - | 4 .95 | 0.05 | 0.18 | 4.77 |
| 11th month | 4.77 | - | 4 .77 | 0.04 | 0.18 | 4.58 |
| 12th month | 4.58 | - | 4 .58 | 0.04 | 0.18 | 4.40 |

| | | | | | | |
|----------------------------|------|---|-------|-------------|-------------|------|
| | | | | 0.62 | 2.20 | |
| 4th Opening Balance | | | | | | |
| 1st month | 4.40 | - | 4 .40 | 0.04 | 0.18 | 4.22 |
| 2nd month | 4.22 | - | 4 .22 | 0.04 | 0.18 | 4.03 |
| 3rd month | 4.03 | - | 4 .03 | 0.04 | 0.18 | 3.85 |
| 4th month | 3.85 | - | 3 .85 | 0.04 | 0.18 | 3.67 |
| 5th month | 3.67 | - | 3 .67 | 0.03 | 0.18 | 3.48 |

| | | | | | | |
|----------------------------|------|---|-------|-------------|-------------|------|
| 6th month | 3.48 | - | 3 .48 | 0.03 | 0.18 | 3.30 |
| 7th month | 3.30 | - | 3 .30 | 0.03 | 0.18 | 3.12 |
| 8th month | 3.12 | - | 3 .12 | 0.03 | 0.18 | 2.93 |
| 9th month | 2.93 | - | 2 .93 | 0.03 | 0.18 | 2.75 |
| 10th month | 2.75 | - | 2 .75 | 0.03 | 0.18 | 2.57 |
| 11th month | 2.57 | - | 2 .57 | 0.02 | 0.18 | 2.38 |
| 12th month | 2.38 | - | 2 .38 | 0.02 | 0.18 | 2.20 |
| | | | | 0.37 | 2.20 | |
| 5th Opening Balance | | | | | | |
| 1st month | 2.20 | - | 2 .20 | 0.02 | 0.18 | 2.02 |
| 2nd month | 2.02 | - | 2 .02 | 0.02 | 0.18 | 1.83 |
| 3rd month | 1.83 | - | 1 .83 | 0.02 | 0.18 | 1.65 |
| 4th month | 1.65 | - | 1 .65 | 0.02 | 0.18 | 1.47 |
| 5th month | 1.47 | - | 1 .47 | 0.01 | 0.18 | 1.28 |
| 6th month | 1.28 | - | 1 .28 | 0.01 | 0.18 | 1.10 |
| 7th month | 1.10 | - | 1 .10 | 0.01 | 0.18 | 0.92 |
| 8th month | 0.92 | - | 0 .92 | 0.01 | 0.18 | 0.73 |
| 9th month | 0.73 | - | 0 .73 | 0.01 | 0.18 | 0.55 |
| 10th month | 0.55 | - | 0 .55 | 0.01 | 0.18 | 0.37 |
| 11th month | 0.37 | - | 0 .37 | 0.00 | 0.18 | 0.18 |
| 12th month | 0.18 | - | 0 .18 | 0.00 | 0.18 | - |

| | | | | |
|-------------------|----|--------|------|------|
| | | | 0.13 | 2.20 |
| DOOR TO DOOR | 60 | MONTHS | | |
| MORATORIUM PERIOD | 6 | MONTHS | | |
| REPAYMENT PERIOD | 54 | MONTHS | | |

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