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A Study on Industrial Consumer Perception and Market Size of Copper Slag and Phospho Gypsum in South India with Special Reference to Sterlite Industry Tuticorin

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ABSTRACT

New ideas and innovations have always been the hallmark of progress made by mankind. At every stage of development, there have been two core factors that drive man to ideas and innovation. Market size and consumer perception about the product is very important for every business .This factor are determine the business are going successfully or unsuccessfully. Market size is the major indicating channel of the product. Wastage recycling is another major important factor for reduce the wastage and utilize the resource in successfully. Now the expectation of the people is high but resource is limited, then the user/ innovators the can find out wastage material to utilize successfully and redemption of wastage material dumped to land or river. This research can be able to find out the demand for this product and how to utilize successfully. The development of construction materials have posed problems and challenge that initiated worldwide research programs and continued conventional and non conventional applications leading to ultimate economy. Researchers developed waste management strategies to apply for advantages for specific needs. The use of Copper Slag (CS) and Ferrous Slag (FS) in concrete provides environmental as well as economic benefits for all related industries, particularly in areas where a considerable amount of Copper slag and Ferrous Slag is produced. Owing to the scarcity of fine aggregate for the preparation of mortar and concrete, partial replacement of Copper Slag and Ferrous Slag with sand have been attempted. Copper Slag and Ferrous Slag are by products obtained during matte smelting and refining of Copper Slag and Ferrous Slag. This work reports an experimental procedure to investigate the effect of using Copper Slag and Ferrous Slag as partial replacement of sand. The strength characteristics of conventional concrete and slag concrete such as compressive strength, tensile strength were found

This topic can be useful to know the Industrial consumer perception of this product and demand for the copper slag and phospho gypsum, and that made me to choose this topic.

KEYWORDS : consumer perception, wastage material, recycling, Ferrous Slag, Copper Slag, phospho gypsum, sterlite Coper industry Tuticorin.

INTRODUCTION:

Recycling resource recovery, waste management and environmental protection have been along the major concerns in almost all extraction and process industries.

It started with awareness of environment pollution caused by almost all major industries, both by the waste products generated, which have to be disposed of as well as by the side effects resulting from the use of number of industrial products. The continuous efforts towards improvement of environmental performance have shown tremendous results with reference to waste management. During the period they were able to dispose gypsum to tune of 1.33 times that of generated quantity. This resulted in net depletion of stock and contributed towards sustainable applications such as cement manufacturing. They were able to dispose copper slag to the tune of 1.11 times of generated quantity in application such as cement, road, abrasive and filling.

PRODUCTS:

*copper slag (or) Ferro sand

* Phospho gypsum (or)calcium sulfate

COPPER SLAG

Copper slag ,which is produced during pyro metallurgical production of copper from copper ores contains materials like iron, alumina, calcium oxide, silica etc. every tonne of metal production about 2:2tonne of slag is generated dumping or disposal of such huge quantities of slag cause environmental and space problems. During the past two decades attempt have been made by several investigators and copper producing units all over the world to explore the possible utilized of copper.

The favorable physic mechanical characteristics of copper slag can be utilized to make the products like cement ,fill ballast, abrasive, aggregate , roofing granules ,glass, tiles etc.

PHOSPHO GYPSUM

Phospho gypsum is a primary byproduct of the wet-acid process for producing phosphoric acid from phosphate rock. It is largely calcium sulfate and has been given the name phospho gypsum. (Gypsum is the common name for hydrated calcium sulfate, a common building material.)

OBJECTIVE OF THE STUDY:

Primary objective:

To find out the market size of the products PHOSPHO GYPSUM and COPPER SLAG

Secondary objective:

- To study about the potential buyers for these product
- To know the major competitors in the market
- To get feedback to analyze the perception of the industrial consumer
- To offer suggestion/recommendations based on the above study

PROBLEM OF THE STUDY

Wastage recycling/re-using is most essential function in big industry. In India there are huge size copper slag and phospho gypsum can be produced by the industry. Then small size of these product can be utilized by the company. In scarcity of the cement and river sand ,the construction industry they can find out the phospho gypsum can utilized construction industry. Then another side the company could not able to dispose the wastage like copper slag and phospho gypsum. I want to make a study about copper slag and phospho gypsum potential buyers in south India. Through this study results, they can identify the market size of the company product and customer perception of copper slag and phospho gypsum.

RESEARCH DESIGN

The research design is the arrangement of condition for collection and analysis of data in procedure. It stands for collection of relevant data and the techniques to be used in the analysis. Keeping in view the objective of the research and the availability of time.

DESCRIPTIVE RESEARCH

Descriptive design includes survey and the fact finding enquiries of different kinds. The major purpose of this research is descriptive of state of affairs it exits at present.

TYPES OF DATA

- Primary data
- Secondary data

The primary data has been collected through the questionnaire.

Sampling technique: Simple random sampling technique

Sampling size: The total sample size taken for the study is 70 consumers

Data collection method: The survey method with a pre- designed structured questionnaire was used to collect data from the sample and telephone interview then observation method.

STATISTICAL TOOLS

1. Simple percentage analysis
2. Chi-square analysis

LIMITATION OF THE STUDY

- The survey is conducted with the help of questionnaire method, so they can't able to get most favorable feedback from the consumer
- Then the survey is conducted only in south india ,they can't able to know full market size of the product
- Some customers could not responds properly due to their busy schedule
- The researcher could not able to go directly and collect information, because the period of study is only three months
- Due to the physical problems can't able to collect whole population

END PRODUCTS OF THE RESPONDENTS

S.NO	END PRODUCTS	NUMBERS	PERCENTAGE
1	CEMENT	29	58%
2	FERTILIZER	8	16%
3	PLASTER OF PARIS	2	4%
4	CONCRETE	1	2%
5	OTHERS	10	20%
TOTAL		50	100%

INSTALLED CAPACITY OF THE CONCERN

S.NO	CAPACITY (MTPA)	NUMBER	PERCENTAGE
1	ABOVE 100000MTPA	29	58%
2	ABOVE 50000MTPA	14	28%
3	ABOVE 10000MTPA	6	12%
4	500 TO 9999MTAP	1	2%
TOTAL		50	100%

RESPONDENTS USING DIFFERENT TYPE OF GYPSUM

S.NO	GYPSUM TYPE	NUMBERS	PERCENTAGE
1	MINERAL GYPSUM	-	-
2	FLUORO GYPSUM	-	-
3	MARINE GYPSUM	-	-
4	PHOSPHO GYPSUM	50	100%
TOTAL		50	100%

FREQUENCY OF PHOSPHO GYPSUM PURCHASE

S.NO	FREQUENCY	NUMBER	PERCENTAGE
1	WEEKLY	21	42%
2	MONTHLY	25	50%
3	YEARLY	-	-
4	AS PER THE SALES	4	8%
TOTAL		50	100%

FEEDBACK ABOUT THE PRODUCT

S.NO	FEEDBACK	NUMBER	PERCENTAGE
1	EXCELLENT	-	-
2	GOOD	32	64%
3	FAIR	18	36%
4	POOR	-	-
5	VERY POOR	-	-
TOTAL		50	100%

OPINION ON SUPPLIERS PERFORMANCE

S.NO	OPINION	NUMBER	PERCENTAGE
1	HIGHLY SATISFIED	-	-
2	SATISFIED	33	66
3	NEUTRAL	17	34
4	DIS-SATISFIED	-	-
5	HIGHLY DIS-SATISFIED	-	-
TOTAL		50	100%

MAJOR PROBLEMS WITH THE SUPPLIERS

S.NO	PROBLEM	NUMBER	PERCENTAGE
1	TRANSPORTS	17	34%
2	QUALITY	13	26%
3	CREDIT POLICY	13	26%
4	QUANTITY	7	14%
TOTAL		50	100%

FACTORS INFLUENCING TO CHANGE FROM CURRENT SUPPLIERS

S.NO	FACTORS	NUMBER	PERCENTAGE
1	LOW QUALITY	10	20%
2	TRANSACTION AND FINANCIAL ISSUES	31	62%
3	INABILITY TO SUPPLY	2	4%
4	LOGISTIC ISSUES	7	14%
5	LOWER COST MATERIAL AVILABILITY	-	-
TOTAL		50	100%

OPINION REGARDING STERLITE PERFORMANCE

S.NO	OPINION	NUMBER	PERCENTAGE
1	EXCELLENT	-	-
2	GOOD	8	16%
3	AVERAGE	35	70%
4	POOR	7	14%
5	VERY POOR	-	-
TOTAL		50	100%

IMPORTANT EXTERNAL FACTOR AFFECTING THE ORGANISATION

S.NO	EXTERNAL FACOR	NUMBER	PERCENTAGE
1	MARKET FLUCTUATION	20	50%
2	SURPLUS PRODUCTION	8	16%
3	NATURAL DISASTER	11	22%
4	INTERNATIONAL MARKET FLUCTUATION	11	22%
TOTAL		50	100%

END USE OF THE PRODUCT

S.NO	END USE	NUMBERS	PERCENTAGE
1	SAND BLASTING	6	30%
2	LAND FILLING	4	20%
3	SHIP ABRASIVE	8	40%
4	ROAD COTRACT	2	10%
TOTAL		20	100%

FREQUENCY OF COPPER SLAG PURCHASE

S.NO	FREQUENCY	NUMBER	PERCENTAGE
1	WEEKLY	4	20%
2	MONTHLY	10	50%
3	YEARLY	1	5%

4	AS PER THE SALES	5	25%
TOTAL		20	100%

FEEDBACK ABOUT THE PRODUCT

S.NO	FEEDBACK	NUMBER	PERCENTAGE
1	EXCELLENT	1	5%
2	GOOD	14	70%
3	FAIR	5	25%
4	POOR	-	-
5	VERY POOR	-	-
TOTAL		20	100%

SUPPLY CHAIN CONTINGENCY IN COPPER SLAG

S.NO	SUPPLY CHAIN CONTINGENCY	NUMBER	PERCENTAGE
1	DELIVERY TIME	1	5%
2	AVILABILITY	3	15%
3	TRASPORTATION COST	15	75%
4	TURNAROUND TIME	1	5%
TOTAL		20	100

TOTAL NUMBER OF RESPONDENTS

S.NO	PRODUCT	NUMBER	PERCENTAGE
1	COPPER SLAG	20	29%
2	PHOSPHO GYPSUM	50	71%
TOTAL		70	100

COMPARISION BETWEEN THE SUPPLIER PERFORMANCE AND EXTERNAL FACTOR ON PHOSPHO GYPSUM (USE CHI-SQURE)

Null Hypothesis:(H0)

There is a relationship between the supplier performance and external factor affecting the company.

Alternative Hypothesis: (H1)

There is no relationship between the supplier performance and external factor affecting the company.

STEP 2: Test statistics

$$X^2 = \sum_{i=1}^{n} \frac{(O_i - E_i)^2}{E_i}$$

X^2= Pearson's cumulative test statistic, which asymptotically approaches a χ^2 distribution.

O_i= an observed frequency;

E_i= an expected (theoretical) frequency, asserted by the null hypothesis;

n= the number of cells in the table

Option	Market fluctuation	Surplus production	Natural disards	International market fluctuation	Total
Transports	10	2	2	3	17
Quality	5	3	3	2	13
Credit Policy	3	2	5	3	13
Quantity	2	1	1	3	7
Total	20	8	11	11	50

Observed frequency	Expected frequency	O!-E!	[O!-E!]^2	[O!-E!]^2/E!
10	6.8	3.2	10.24	1.505
2	2.72	-0.72	0.5184	0.190
2	3.74	-1.74	3.027	0.809
3	3.74	-0.74	0.547	0.146
5	5.2	-0.2	0.04	0.007
3	2.08	0.92	0.846	0.406
3	2.86	0.14	0.019	0.006
2	2.86	-0.86	0.739	0.258
3	5.2	-2.2	4.84	0.930
2	2.08	-0.08	0.006	0.003
5	2.86	4.14	17.139	5.992
3	2.86	0.14	0.019	0.006
2	2.8	-0.8	0.64	0.228
1	1.12	0.12	0.014	0.012
1	1.54	-0.54	0.291	0.189
3	1.54	1.46	2.131	1.384

X^2 =12.071

The table value for 5% significance level for degree of freedom 9 is 16.911 the calculated value is 12.071

COPPER SLAG

Market size of the copper slag in South India=355000 tones

Annual production of copper slag from Sterlite industry =600000 tones

Segment's	Annual consumption per tones
Abrasive segment	36,000 tones
Land filling	175000 tones
Cement industry	120000 tones
concrete	24000 tones
total	355000 tones

PHOSPHO GYPSUM

Market size of phospho gypsum in south India=1200000 tones

Area	Annual consumption per tones
Tamil nadu	480000 tones
Andhra Pradesh	420000 tones
Karnataka	240000 tones
Others	60000 tones

No	Name Of The Industry	Annual Production Capacity In Tones	% Of Production
1	STERLITE	950240	27.49
2	SPIC	620000 tones	17.94
3	FACT	900000 tones	26.04
4	COROMANDEL	985500 tones	28.17
	TOTAL	3455740 tones	100

FINDINGS

1. Most of the respondents are (58%) cement industry.
2. Maximum consumer they give opinion about the product is good (68%)
3. Transaction and financial issues are the major factor for the changing the current supplier.
4. 40% of copper slag are going to ship abrasive .
5. Purity is the major problem of the copper slag.
6. Surplus of production they can decrees the product image .
7. Annual consumption of copper slag is 355000 tons in South India.
8. Annual consumption of phospho gypsum in South India 1200000 tons.
9. Potential buyers of copper slag are universal abrasive limited and Bharakath engineering Tricky.
10. Potential buyers of phospho gypsum are ultra tech cement limited –Rajashree cement works, India cement –Sankar Nagar, Dalmiya cement –Ariyalur ,and Madras cement limited Ariyalur.
11. Major competitors of the company
12. Copper slag-birla copper, Hindustan copper limited, jagidiya copper limited (Gujarat).
13. In phospho gypsum –Spic (Tuticorin),FACT (cochin), Coromandel (Andhra Pradesh and Tamil nadu.

SUGGESTIONS

- As the quality of the phospho gypsum is highly satisfied .it is advised the company should maintain the same quality in future.

- The consumer expects more discount, so the company may offer more trade discount in order to improve the sales.
- Copper slag moisture affect the product quality, the company must reduce the moisture level of copper slag.
- The company may discuss with railway authorities and get freight discount which is financially helpful and comparatively cheap when compare to the other means of transports and also it help to keep-up the product quality.
- Copper slag is used for sand blasting and having good demand in international market ,the company have to improve the quality of the copper slag as per international standard for blasting, in order to capture the international market.
- Potential buyers of the phospho gypsum is cement industry, so keep good relationship with the cement industry.
- Potential buyers of the copper slag is ship abrasive segment, so the company must concentrate on consumer attrition on ship abrasive company and establish the potential market.

CONCLUSION

This study helps the company to know about the potential consumer of copper slag and phospho gypsum. This study also helps to maintain a good relationship between the industrial consumer and the company. The study exhibits the consumer expectation of copper slag and phospho gypsum; The Company can understand the expectation of the industrial consumer and try to satisfy all the needs and expectation of them, In order to sustain in the market. The firm can also reach to the competitive advantage position, as the suppliers of the phospho gypsum and copper slag are very less in the market.

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