

A Study on Refined Glycerin Market in India

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ABSTRACT

The major aim of this project is to study the usage of glycerin in various industries. The researcher also focuses and explores the demand percentage for glycerin in the present market and studies the future market position. It reveals which company leads the market in the present scenario. The researcher has used primary data through questionnaire and secondary data through previous research studies, books and browsed the Internet. The data analysis used is the percentage analysis which perfectly fits in this research work. The researcher has concluded with interesting finding and given scope for the future research work.

KEYWORDS: Glycerin, Market, Industry.

I. INTRODUCTION

Glycerin, also called Glycerin, and glycerol is a dihydric alcohol with a molecular formula $C_3H_5(OH)_3$. Its IUPAC name is Propanol-1, 2, 3-triol. It is colorless, odorless, has sweet taste, very viscous and hygroscopic. It easily dissolves in water because of its three hydroxyl groups. It combines with three fatty acids to form what is called triglyceride. This is the main constituent of fats and oils which is found naturally in plants and animals. The below figure shows the molecular structure of glycerin.

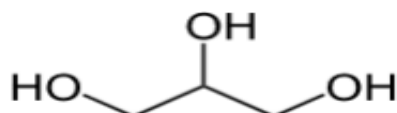


Fig. 1.1 Molecular Structure of Glycerin

Glycerin was accidentally discovered in 1779 by a Swedish chemist K. W. Scheele while heating a mixture of olive oil and lead monoxide and he called it sweet principle of fat.

The main sources of triglycerides are plants formed as a result of photosynthesis. The 2 animal's triglyceride is possibly formed by assimilation of mostly carbohydrate and other substances present in their food, this is a complex process and it is not understood fully.

The main processes that utilize triglycerides in production of glycerin as a byproduct are: biodiesel, soap, fat splitting, fatty alcohol, etc.

There is also synthetic glycerin and this is obtained from propylene oxide a product of petroleum. It is used mostly by the pharmaceutical sector for manufacturing drugs and other pharmaceutical purposes (Glycerin methodology, n.d.). The only manufacturer of synthetic glycerin in United States is Dow Chemical, but it closed its 309 metric kilo tons plant in Texas because of surplus crude glycerin generated from natural processing of fats and oils (Glycerin market analysis, n.d.). There are other synthetic glycerin manufacturers, mostly in Asia and Europe.

Glycerin has about 2000 applications and it plays an important role in nature (Glycerin and the market, n.d.). It is used in foods, pharmaceuticals, personal care products, industrial chemicals, etc. Newly discovered applications of glycerin are generating a lot of interest of later and this is due to its expected effects on the market. The glycerin surplus stock and at a cheap price is being used as a substitute to some other chemicals. There are three grades of glycerin; crude glycerin that is about 40% to 88% pure with water and other impurities like methanol, sodium chloride, sodium hydroxide, matter organic non glycerol (MONG), etc. This glycerin grade is obtained by recovery process from the waste stream of the main product.

Table 1.1 Crude Glycerin Composition (SRS Eng. Corp. BioTech., n.d.)

Properties	% Composition
Glycerin Content	40 – 88
Ash	2.0
Water	12.0 Max
Ph	4 – 9
Organic Residue	2.0 Max

The technical grade is about 95% to 98% pure and contains water and other impurities. It is used mostly for industrially manufacturing purposes. The third grade is 99.7% pure and this grade is called U.S. Pharmacopeia or chemical pure glycerin. It is also referred to as pharmaceutical or food grade and, as the name implies, it is used in pharmacy, food, etc.

The glycerin market outlook was good in the 1990's. The price was \$1.00 plus for one pound of glycerin. It also has experienced some occasional price fluctuations. There are occasional price drops mostly in 1992, 2000, etc. The occasional fluctuations are mostly as a result of surplus stock.

OBJECTIVES OF THE STUDY

A) Primary objectives of the study:-The primary objectives of my study is to analyze the market share of Refined Glycerin in food application in India.

B) Secondary objectives of the study:-To identify the quantity consumption of Refined Glycerin in food application. To identify the percentage growth of food industry in India.

SCOPE OF THE STUDY:-

- This study will help to evaluate the present market share of Refined Glycerin in Food Industry in India.
- This study helps to identify the percentage growth of food industry in India.

LIMITATION OF THE STUDY:-

- The data's are complicated to collect in the reputed companies.
- Delay in providing the few data like quantity of the product from the company.
- Issue in getting the information in first attempt.

COMPANY PROFILE:-

INTRODUCTION: -

The company established in the mid of 2009. The main function of the company is manufacturing of chemicals and Supplier of Metallic Stearate's, Industrial Chemicals & Food Products. The company is the leading and reliable player in the Industry, Committed to Customer Excellence, and Professional Player with Efficient logistic chain.

SHARES OF COMPANY: -Chemical Products – 40%, Pharmaceuticals Products – 30, Staffing & Recruiting – 30%.

Chemical Products: 1. **Metallic Stearate's** such as One pack stabilizer, Zinc stearate, Calcium stearate, Aluminium stearate. 2. **Refined Glycerin** 3. **Benzalkonium chloride (BKC)**

Pharmaceutical Product's: -Tadalafil tablet's, Sildenafil citrate's, Dapoxetine HCL tablet's, Amlodipine uncoated tablet's IP, Cetirizine Film coated tablet's, Lansoprazole Gastro resistant Capsules.

Staffing & Recruiting : Markets include USA, Canada & Mexico.

Industries We Serve: -Poly vinyl chloride, Textile processing, Paint manufacturing, Paper & pulp manufacturing, Pharmaceutical manufacturing, US IT Industry

II. REVIEW OF LITERATURE

Piermaria et al, (2011): evaluated the ability of kefir to form films and the effect of glycerol addition at different concentrations on film properties. Kefir was able to form films at concentrations ranging from 5 to 10 g/kg. The concentration 10 g/kg was selected because the films were easily removed from the plate. These films exhibited good water vapor barrier properties and the addition of 25 g of glycerol per 100 g of polysaccharide allowed the optimum value of 4.09×10^{-11} g/m s Pa to be obtained. Films without glycerol were brittle and rigid since they showed high Young's modulus and tensile strength values and low deformation at break. Glycerol addition led to extremely high elongation values, allowing flexibilities comparable to those of synthetic materials.

Mastromatteo et al, (2008): investigated the individual and interactive effects of the spelt and wheat bran as well as glycerol, on the properties of wheat gluten based edible films. Results highlight that the glycerol presence had a negative effect on water vapor permeability (WVP) values of the films (increase of WVP), whereas the bran presence had a positive influence (decrease of WVP). The Young's Modulus of the composite films increased with the increase of bran concentration and with the decrease of glycerol.

Cho et al, (2007): prepared edible films from membrane processed soy protein concentrate at various film forming solution pHs. Their mechanical, barrier, and physical properties were compared with soy protein isolate films. As the film solution pH increased from 7 to 10, the resulted MSC films were more transparent, yellowish, and had lower oxygen permeability. However, tensile strength, Young's modulus and water vapor permeability of MSC films were not affected by film solution pHs.

Bamdad et al, (2006): prepared edible film from lentil protein concentrate (LPC) by using LPC (5 g/100 ml water) and glycerin (50 percent, w/w of LPC). Water Vapour Permeability values and other characteristics of the lentil protein-based edible films were comparable with other edible protein films. LPC film had more red and less yellow color; it was also observed that the film had good mechanical properties and water vapor permeability together with good solubility.

Taylor et al, (2005): examined several food compatible solvents to replace aqueous ethanol, commonly used for prolamin film casting. Glacial acetic acid and lactic acid were identified as the best primary solvents and 55 percent (w/w) aqueous isopropanol as a good binary solvent. The sensory, tensile, and water barrier properties of the films cast from glacial acetic acid at 25 °C and aqueous ethanol at 70°C were almost the same. However, the use of glacial acetic acid at 25 °C for casting kafirin films is advantageous as it gave films of more consistent quality

Pinotti et al, (2007): analyzed the effect of an electrical field applied during drying on microstructure and macroscopic properties of films obtained with different mixtures of chitosan (CH) and methyl cellulose (MC). CH treated films showed higher Young's Modulus values than the control ones; in composite control samples, YM and tensile strength increased with CH concentration, leading to stronger films.

Muller et al, (2008): investigated the effects of plasticizer namely glycerol and sorbitol on the water sorption isotherms and water vapor permeability (WVP) of cassava starch films prepared by casting. The WVP values were determined in three ranges of RH, (2–33 percent, 33–64 percent and 64–90 percent). In all cases, an increase in WVP values was observed with increasing plasticizer concentration and RH.

RESEARCH METHODOLOGY

TYPE OF RESEARCH	: Dichotomous Research
POPULATION OF THE STUDY	: 200
SAMPLING TECHNIQUE.	:Survey method
SAMPLE SIZE	: 100
DATA TYPE	: Primary and Secondary
DATA SOURCE PRIMARY	: Structured Questionnaire
DATA SOURCE SECONDARY	: Book/magazines/Articles/On
TOOLS USED FOR ANALYSIS.	: Percentage Analysis

DATA ANALYSIS AND INTERPRETATION

1. REQUIRE REFINED GLYCERIN IN YOUR COMPANY

Particulars	No. Of Respondents	Percentage
Yes	100	100
No	0	0
TOTAL	100	100

INTERPRETATION: The above table shows that, 100 percent of the respondents accepted that they require Refined Glycerin in their company.

2. THE APPLICATION YOU ARE USING FOR

Particulars	No. Of Respondents	Percentage
Food products	18	18
Pharmaceuticals	30	30
Cosmetic	20	20
Alkyd Paints & Coatings	12	12
Tobacco Humectant	3	3
Polymer industry	7	7
TOTAL	100	100

INTERPRETATION: The above table shows that, the application used mostly for the Pharmaceuticals 30%, Cosmetics 20% and Food Products 18%.

THE PURCHASE FREQUENCY IN A YEAR

Particulars	No. Of Respondents	Percentage
Monthly	87	87
Every three months	8	8
Every six months	2	2
Occasionally	3	3
TOTAL	100	100

INTERPRETATION: 87% of the respondents purchase on monthly basis. 8% purchase every three months. 2% purchase every six months and 3% purchase every occasionally

THE QUALITY (GRADE) YOU ARE USING

Particulars	No. Of Respondents	Percentage
99.7% IP Grade	18	18
99.0% Food Grade	75	75
99.7% Commercial Grade	7	7
TOTAL	100	100

INTERPRETATION: The above table shows that, 75% use 99.0 food grade. 18% use 99.7% and 7% use 99.7 commercial grade.

THE SOURCE OF REFINED GLYCERIN

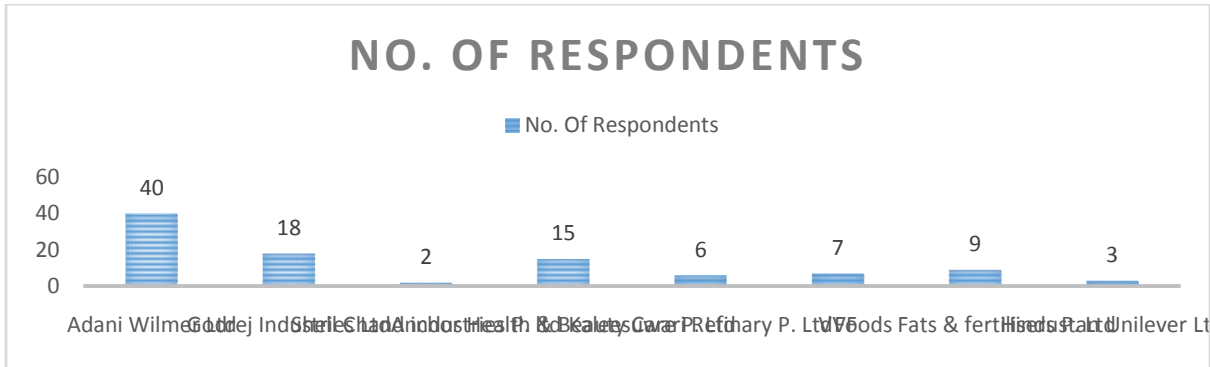
Particulars	No. Of Respondents	Percentage
Imported	17	17
Domestic manufacturing	83	83
TOTAL	100	100

INTERPRETATION: The above table shows that 17% import refined glycerin and 83% manufacture domestically

IF PRODUCT IS FROM DOMESTIC, FROM WHOM DO YOU PROCURE

Particulars	No. Of Respondents	Percentage
Adani Wilmer Ltd	40	40
Godrej Industries Ltd	18	18
Shell Chand industries P. ltd	2	2
Anchor Health & Beauty Care P. Ltd	15	15
Kaleeswari Refinery P. Ltd	6	6
VVF	7	7
Foods Fats & fertilisers P. Ltd	9	9
Hindustan Unilever Ltd	3	3
TOTAL	100	100

INTERPRETATION: From the above table it is inferred that 40% procure from Adani Wilmer Ltd. 18% procure from Godrej Industries Ltd. 15% of the respondents procure from Anchor Health & Beauty Care P. Ltd. 9% procure from Foods Fats & fertilizers P. Ltd. 7% procure from VVF. 6% respondents procure from Kaleeswari Refinery P. Ltd. and 3% respondents buy from Hindustan Unilever Ltd.



THE APPLICATION OF REFINED GLYCERIN IN FOOD INDUSTRY

Particulars	No. Of Respondents	Percentage
Additives / Fillers	30	30
Softening	10	10
Sweetening agent	10	10
Preservatives	15	15
Others	20	20
Thickening	15	15
TOTAL	100	100

INTERPRETATION: 30% of the respondents use it as additives. 10% of the respondents use it as softening agent. 10% use as sweetening agent. 15% use it as preservatives. 15% use for thickening purpose and other usage is 20%.

THE PERCENTAGE GROWTH EXPECTED IN THE NEXT TWO YEARS IN THE COMPANY

Particulars	No. Of Respondents	Percentage
0% to 25%	77	77
25% to 50%	21	21
50% to 75%	2	2
75% to 100%	0	0
TOTAL	100	100

INTERPRETATION: 77% percent say that the growth will be from 0 to 25% in next two years. 21 % say that they expect a growth of 25% to 50%

THE VOLUME OF REFINED GLYCERIN CONSUMPTION PER MONTH

Particulars	No. Of Respondents	Percentage
<1000kg	46	46
1000kg -5000kg	38	38
5000kg – 15000kg	12	12
Above 15000Kg	4	4
TOTAL	100	100

INTERPRETATION: 46% of the respondents consume <1000kg. 38% of the respondents consume 1000kg - 5000kg. 12% of the respondents consume 5000kg – 15000kg and 4% consume above 15000Kg.

THE ALTERNATIVE SUGGESTION FOR REFINED GLYCERIN

Particulars	No. Of Respondents	Percentage
Yes	0	0
No	100	100
TOTAL	100	100

INTERPRETATION: 100 percent of the respondents say that there is no alternative for refined glycerin

III. FINDINGS:-

- 100 percent of the respondents accepted that they require Refined Glycerin in their company.
- The usage of glycerin in Pharmaceuticals is 30%, Cosmetics 20% and Food Products 18% and 12% is used in paint industry
- 87% of the user is procuring every month.
- 83% of the glycerin source is by manufacturing domestically
- 40% of the respondents procure from Adani Wilmer Ltd. 18% procure from Godrej Industries Ltd. 15% of the respondents procure from Anchor Health & Beauty Care P. Ltd.
- 30% of the Refined Glycerin is used in the Additives and preservatives.
- In food industry 99.0% Food Grade glycerin is used.
- 46% of the respondents use less than 1000kg in a month.38% of the respondents consume 1000kg - 5000kg.
- There is no alternative product for Refined Glycerin till now and this is accepted by all the respondents.

IV. CONCLUSION:

In future there is a vast market for glycerin as the maximum respondents purchase it on monthly basis. The study suggests to focus on Pharmaceutical, cosmetics and food market as it is stable market where the demand never saturates. As there is no alternate for glycerin many new products yet to peak into the market may also need it.

The study concludes a higher demand for glycerin in domestic as well as international market. An innovation concepts is hidden in the study to find an alternate for the glycerin. So there is a very big scope for future research in the area of glycerin

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