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Hydrogenated castor oil

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Project at a Glance

- Castor oil is a vegetable oil obtained from the castor bean (technically castor seed as the castor plant, *Ricinus communis* (Euphorbiaceae), is not a member of the bean family).
- Castor oil (CAS number 8001-79-4) is a colorless to very pale

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The primary sources of Castor Oil are from India, China and Brazil. Scientific and historical records reveal that regardless of origin, the chemical nature and composition are remarkable uniform.

India produces about 800,000 tons annually, and accounts for over 60% of the entire global production. Castor seed is cultivated because of commercial importance of its oil.

India is also the biggest exporter of castor oil. It corners about 70% of the global castor oil trade. Components of the oil, known as hydroxy fatty acids, are essential for making high-quality lubricants for heavy equipment or jet engines, for example. Castor oil is also used in paints, coatings, plastics, antifungal compounds, shampoo, and

Project Information

- Project proposal for castor oil derivatives
- Project expansion: Synthetic organic chemicals derived from Castor oil
- Project Consultancy
- Project Guide
- Hydrogenated Castor Oil

Scenario in India

- Castor Seed Oil , India
- Project Outline for Castor Oil Derivatives
- Castor Project Consultants
- Major Companies

Hydrogenated-Castor-Oil

Process, Applications, Product, Patent, Consultants, Company Profiles, Plant, Projects, Raw Materials

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Information @ a Glance

Contents

- Hydrogenated castor oil (HCO) or castor wax is a hard, brittle wax that is insoluble.
- The HCO is insoluble in water and most organic solvents, but it is soluble in hot solvents.

Process Information

- [Castor Oil, Hydrogenated](#)
- [Hydrogenation of Triglycerides \(Oils\)](#)
- [Controlled Caster Hydrogenation](#)
- [Spilling the Beans About Castor Oil and its Derivatives](#)

Market & Application

- [Business opportunities for castor crop, oil and derivatives](#)
- [Comprehensive Castor Oil Report](#)

Hydrogenated castor oil - Applications

- Hydrogenated castor oil used in the manufacture of multipurpose Lithium/Calcium grease and high performance aviation grease.
- Hydrogenated castor oil used for the manufacture of soaps & cosmetics
 - **It is used in the manufacture of specialty chemicals for applications such as metal working, plasticizers and textile auxiliaries in the form of derivatives such as esters, ethoxylates, sulfates .**
 - **It is also used as a Rheological agent that provides thixotropy in paints, coatings, inks, adhesives, sealants and numerous industrial composition.**

Hydrogenated castor oil Production Process

- It is produced by adding hydrogen in the presence of a nickel catalyst.
- In the hydrogenation process, the ricinoleic acid becomes fully saturated and forms a viscous wax-like product with a high melting point of 86°C , which makes HCO valuable in resin and polymer mixtures.

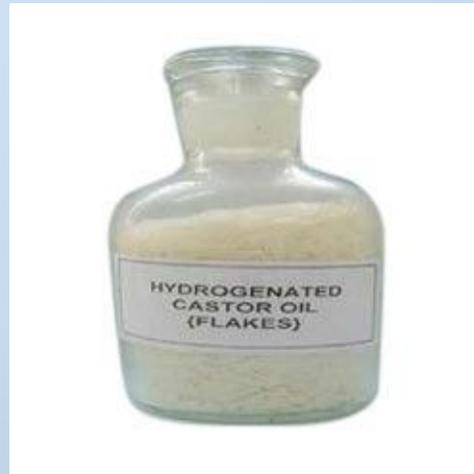
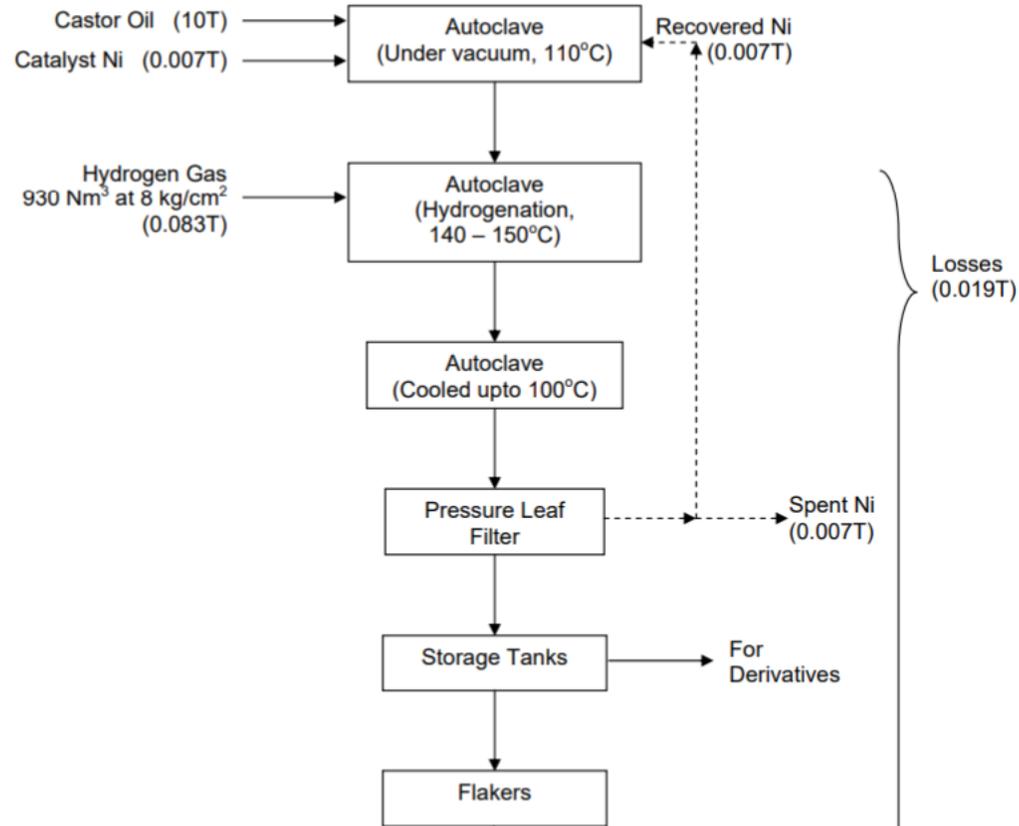


Figure 2.3: Process Flow Diagram of Hydrogenated Castor Oil (HCO)



2.6 PRODUCT & RAW MATERIAL DETAILS

2.6.1 Products

The industry proposes to manufacture Hydrogenated Castor Oil and Castor Oil Derivatives and its By-products. The proposed production quantities for these products are presented in Table 2.3.

Table 2.3: Production Details

SN	Product	Production, MT/Month
1.	Hydrogenated Castor Oil	2600
2.	12 Hydroxy Stearic Acid	1300
3.	Ricinoleic Acid	
4.	Methyl Ricinoleate	530
5.	Hydrogenated Methyl Ricinoleate	
6.	Undecylenic Acid	50
	By-Products	
7.	Glycerine (65 – 80%)	200
8.	Sodium Sulphate (Commercial grade)	350
9.	Heptaldehyde Crude	40
10.	Mixed Fatty Acids	30

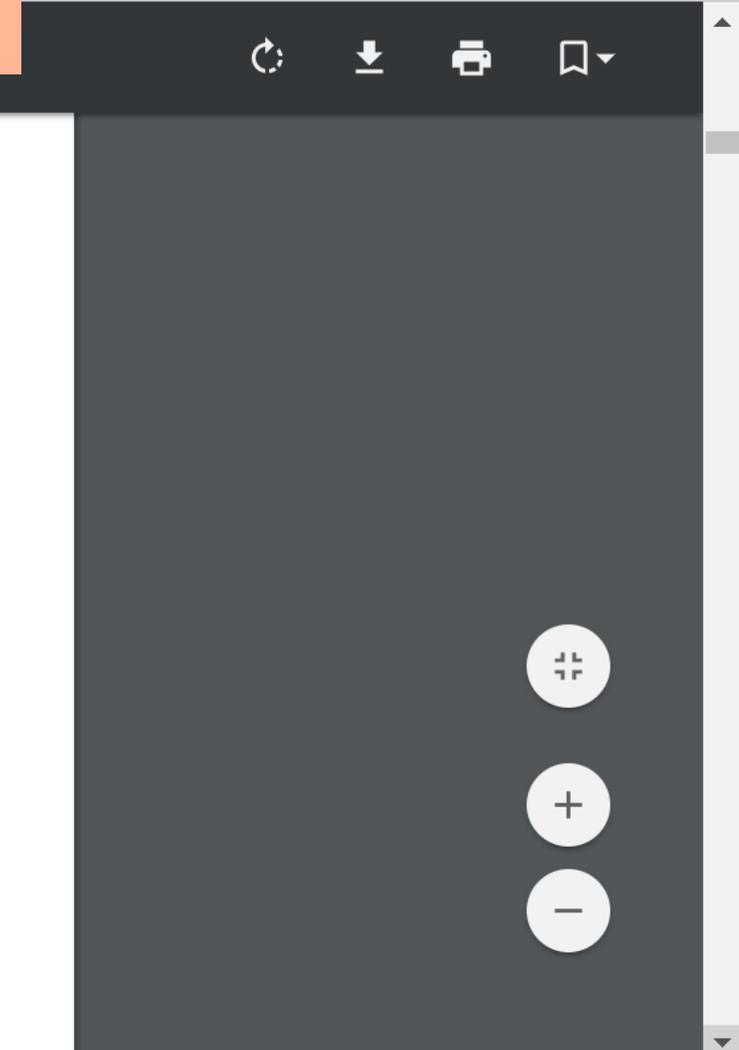
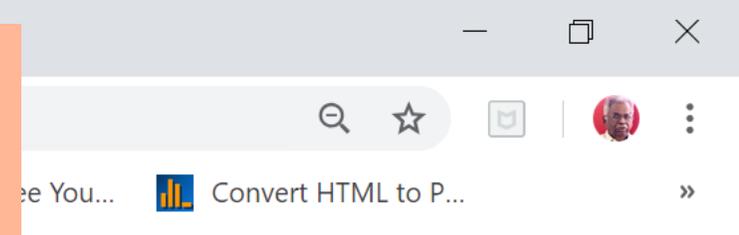


Table 2.4: Lists of Raw Materials

SN	Raw Material	Consumption, MT/Month
1.	Castor Oil	4600
2.	Caustic Lye (48%)	400
3.	Sulfuric Acid (33%)	700
4.	Hydrogen	241800 NM ³
5.	Methanol	60
6.	Nickel (Catalyst)	0.2
7.	Sodium Methoxide (Catalyst)	0.005

2.6.3 Handling, Storage and Transportation

The liquid and gaseous materials involved in the process would be handled through pipelines in a way to avoid the direct contact with the chemicals while handling. Solid and powder materials shall be transferred manually and mechanically. All the process and storage equipment handling the chemicals would be maintained adequately so as to permit no leakage or spillage of the chemical at any stage.

All the raw materials, intermediates products and the finished products shall have exclusive storage facilities with proper ventilation. The storage yard of chemicals would be isolated from the other plant activities. Minimum inventory of the materials would be stored as per the MSIHC Rules and the safety features as

Process Description For Hydrogenated Castor Oil [HCO]

The raw material, bleached castor oil (BBS grade) is processed under vacuum condition at a temperature of around 160 degree Celsius in presence of nickel catalyst

As soon as the raw material reaches its required temperature, the vacuum is stopped and hydrogen is fed, while the stirrer is still operating

The hydrogen feed is closed as the required degree of hydrogenation is achieved and after this, hydrogenated product is started cooling

As the product temperature reaches around 100°C, the final product gets filtered, cooled and then conveyed to flaking unit for flaking and bagged

Project Description

- The Project envisages setting up of a manufacturing unit for producing the various derivatives of Castor.
- The project will involve the purification of Castor oil and subjecting it to various treatments such as dehydration, hydrogenation, saponification, acidification etc. to extract various derivatives such as dehydrated castor oil, hydrogenated castor oil, 12-hydroxy stearic acid etc.
- There are about 200 castor oil derivatives, however the project will involve the production of only selected few that are commercially important and find applications in industrial products.

Market Scenario

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Global Hydrogenated Castor Oil Market Forecast to 2022: by Key Players, Application, Type and Region

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The Report Study On Global Hydrogenated Castor Oil Market 2018 offers an inherent and described analysis of Hydrogenated Castor Oil industry which helps company executives, industry investors, and industry participants with in-depth intuition to enable them to make informed vital decisions regarding the opportunities in the global Hydrogenated Castor Oil market.

Report Details

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The report Entitled "Global Hydrogenated Castor Oil Market 2018" focuses on outlining and narrating the key influencing elements for the growth of the market. It also proposes a thorough study of the market stature (revenue), market share, key market segments, distinct geographic regions, dominant market players, and prime industry

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