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AIDA NEWS LETTER

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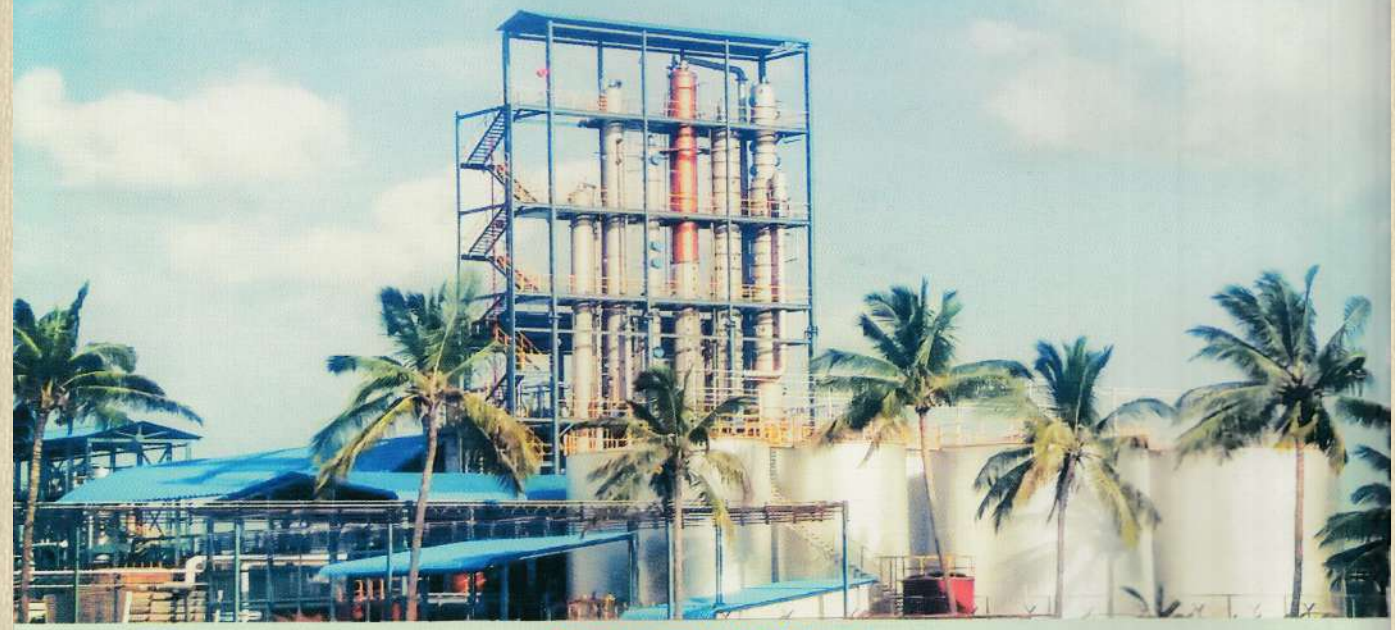

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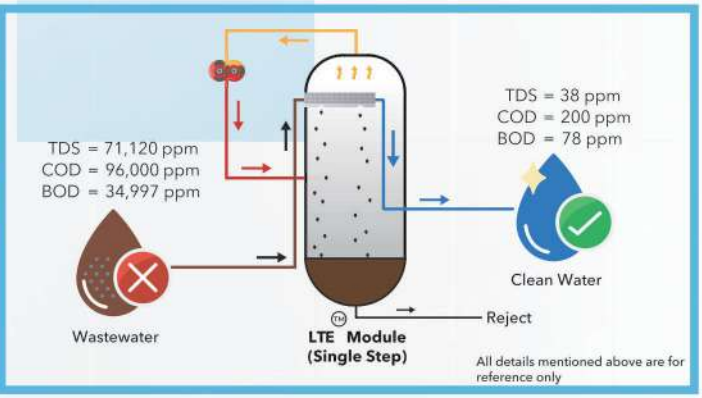

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UPDATING THE AIDA DIRECTORY OF INDIAN DISTILLERIES

All Distillers are aware that All India Distillers' Association (AIDA) publishes its Directory every two years. Under this scheme the next Directory will be published w.e.f. 31/07/2021.

In this regard we are giving below the format of information required from each and every distillery (Members or Non-Members) even if your information is correct and complete in the existing edition of the directory.

You are therefore requested to kindly furnish your details according to the format given below, in complete form and send us the same immediately.

Please note the published directory is an important document with regard to information about each and every distillery unit in the country and the information is often used by the Government Departments apart from the technology providers and equipment suppliers including few from foreign countries.

Please therefore ensure that your complete information is submitted accordingly.

Name & Address of Factory and Name of Proprietor Chairman MD (Managing Director)	Phone & Fax No of Factory and Offices (H. O. Branch Office Regional Office) Email Website Address	Whether Distillery is attached to Sugar Factory Yes/No Railway Station Distance	Whether Distillery is a Captive Unit for supply of Alcohol to your Chemical Plant Y/N Airport Distance	Licensed and Installed Capacity of RS ENA GRAINS ETHANOL	Licensed and Installed Capacity in K.L. Per Annum	Exports Y/N Product	ZLD Technology Molasses / Grain

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Please send us your articles or piece and share your experiences or experiments with other members from the industry.

Let us make your magazine an open window for airing and sharing your views and contributions.

For any queries in this regard please write to :

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AIDA NEWS LETTER

APRIL'21 - MAY'21

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Ethanol As Essential Energy

In 2020, the lesson learned was that ethanol is the embodiment of "Essential Energy". Ethanol produces the renewable fuel and delivers the nutritious feed that livestock and poultry producers rely upon. Ethanol proved essential for weathering the Covid.

Recognising the critical need to combat the spread of the virus, many ethanol producers quickly took the steps necessary to produce the high-purity alcohol that comprises roughly 70% of every bottle of hand sanitizer. Later in the year, news that vaccines were in development was greeted with understandable enthusiasm; it signalled the beginning of the end of the pandemic. But it also created a new challenge.

Much of the vaccine would need to be transported and stored at incredibly low temperatures, necessitating increased supplies of dry ice. Once again, the ethanol industry - which produces supply of CO2, the critical component of dry ice - was called upon to meet the increased demand for an essential product. The 2021 Ethanol Industry Outlook suggest that tomorrow's challenges of climate change, food and energy security, and rural prosperity will continue to make ethanol an Essential Energy.

The global ethanol market size was valued at USD 89.1 billion in 2019 and is anticipated to register a compound annual growth rate (CAGR) of 4.8% from 2020 to 2027. The demand for the product is driven by growing usage of the product as a biofuel. The rising consumption of alcoholic beverages is another major factor supporting market growth. Ethanol can be manufactured by both natural as well as petrochemical feedstocks. In the natural process, natural sugars are fermented in the presence of yeast.

The Indian ethanol market is projected to grow from $2.50 billion in 2018 to $7.38 billion by 2024, exhibiting a CAGR of 14.50% during 2019-2024, on the back of increasing ethanol use in applications such as fuel additives and beverages. Ethanol is a prominent alcoholic beverage, mainly found in beer, cider, wine, spirits and ale. Indian government is trying to reduce its dependence on imported crude oil and incentivising Indian sugar manufacturers to produce ethanol for Oil Marketing Companies (OMCs). It is expected that ethanol production will increase by three to five folds in the future in order to meet the demand for its 20% Fuel Blending Programme (FBP). Factors such as increasing alcohol consumption and changing lifestyle along with growing influence of the western culture are likely to drive the demand for ethanol in the country.

In terms of source, the Indian ethanol market has been categorised into sugar & molasses based ethanol, second generation (mixed grains) and grain-based ethanol. Based on application, the market has been segmented into industry solvent, fuel & fuel additive, beverages, disinfectant, personal care, and flavouring & fragrance. Based on purity, the market has been segmented into denatured and undenatured. Government's emphasis on ethanol production from bio mass and solid waste is likely to become a major source of ethanol production in future.

India has target of achieving 10% Ethanol blending by 2022 and 20% Ethanol blending by 2030.

Ethanol remains the highest-octane, lowest-cost motor fuel on the planet. And it is the only tool available at scale in the near term to significantly reduce carbon emissions from gasoline. Meanwhile, the industry's co-products including distillers grains and distillers oil provide indispensable protein and energy to a hungry world.

State-run oil marketers are required to blend

10% ethanol in petrol under the national policy on biofuels 2018 by 2022 and 20% by 2030. But so far this has not been moving at scale as surplus sugarcane was not easily available and the blending is only 5% now.

To improve supplies of ethanol blended petrol, the government has widened the feedstock options. Accordingly, the National Biofuel Coordination Committee of the oil ministry in June allowed the conversion of surplus rice with the Food Corporation into ethanol.

It has also allowed procurement and conversion of the surplus maze into ethanol. With this, the ethanol production happens from six feedstocks - 100% sugarcane juice/ sugar syrup/sugar; B-heavy molasses which is sweeter; C-heavy molasses which is mildly sweet; damaged food grain; surplus rice from FCI and surplus maize.

India is realising the urgent need to blend ethanol with fuel as consumers and industry are feeling the pinch. A look at India's production capabilities and its ability to meet the 20% target of blending by 2030.

Adding surplus rice procurement process from FCI has already started for the 2020-21 cycle and very soon OMCs shall start procuring maze for making ethanol as well.

Of the total blending by 2022, 300-350 crore litres will come from sugarcane, and the rest from non-sugar feedstock like damaged foodgrains, adding 160 crore litres of 180 crore litres come from sugarcane.

The estimated annual petrol demand is pegged at 4,600 crore litre this year, which means 450-460 crore litre of ethanol mixing in the December 2020 to November 2021 crop cycle.

Mills in U.P. are expected to produce about 105 lac tons in 2020-21 SS, as against 126.37 lac tons produced in 2019-20 Sugar Season (SS). Estimated lower production this year is because of reportedly lower cane yields and lower sugar recoveries in the State, much higher diversion to gur/khandsari units and much higher diversion of sugar for production of ethanol by way of diversion of B-heavy molasses and sugarcane juice. Based on the allocations made by the OMCs for supply of ethanol in 2020-21, it is estimated that about 6.74 lac tons of sugar will be diverted for production of ethanol by the sugar mills in the State in the current year as compared to about 3.70 lac tons diverted in 2019-20 SS.

In the sector of cane development and sugar industry, distillation of 120 kilolitres per day capacity will be established in Pipraich sugar mill which will start in December 2021. There will be facility to manufacture ethanol. Pipraich sugar mill will be the first sugar mill in North India to manufacture ethanol directly from sugarcane juice.

The crushing capacity of Mohiuddinpur-Meerut sugar mill of the corporation area was increased to 3,500 TCD from 2,500 TCD.

A target to increase the crushing capacity of Mohiuddinpur-Meerut sugar mill from 3,500 TCD to 5,000 TCD is proposed to benefit 1,00,000 cane farmers in the state.

Cabinet has approved guidelines for production of ethanol from cane juice and syrup in the distilleries of the state.

Cabinet order is as follows: The decision will aid in reducing excess sugar stocks, increasing liquidity with the sugar mills for settling cane farmer's dues and making higher ethanol available for Ethanol Blended Petrol (EBP) Programme; Surplus sugar production has depressed sugar prices, thereby impacting sugar industry's capacity to pay sugar cane farmers. The ex-distillery price of ethanol derived from cane juice is Rs. 85 per liter

while that from C-heavy molasses is Rs. 45.69 per liter, for the ethanol supply year beginning December 2020. Higher remunerative price for ethanol produced from cane juice will help in reduction of cane farmer' arrears; Sugarcane juice -shall mean, primary juice, secondary juice, mixed juice and clear juice as obtained by sulphitation or defecation process. Sugarcane syrup shall mean concentrated juice having total dissolved solid content not less than 50 brix; Sugar mills with captive distilleries within the premises shall be allowed to produce ethanol from cane juice and syrup. Standalone distilleries will not be allowed to produce ethanol from cane juice and syrup; Ethanol produced from cane juice shall be used only for Ethanol Blended (EBP) Programme; as no sugar or molasses is produced in the process, the income from ethanol derived from cane juice and syrup shall be tagged for payment of sugarcane dues to farmers. All the instructions regarding cane allotment and cane payment issued from time to time shall be binding on these units and The State Government has earlier permitted ethanol production from B-heavy molasses. Since then, more than 40 distilleries in the state are producing ethanol form B-heavy molasses, resulting in a significant increase in ethanol production in the state. The state is the highest producer of ethanol in the country.

Cabinet decision will empower the sugar mills to choose between production of sugar or production of ethanol from cane juice, based on viability of market price of sugar, further improving the income of sugar mills and there by better cane payment to farmers.

Maharashtra is expected to produce about 105.41 lac tons in 2020-21 SS, as against 61.69 lac tons produced in 2019-20 SS. Higher estimated sugar production this year is mainly due to increased cane area by about 48% and better cane yields as compared to the last season owing to favourable weather conditions as well as increase in percentage of plant cane. Based on the allocations made by the OMCs for supply of ethanol in 2020-21, it is estimated that sugar mills in the State will divert about 6.55 lac tons of sugar for production of ethanol in the current year, which is substantially higher as compared to only about 1.42 lac tons diverted in 2019-20 SS.

The third major sugar producing State viz. Karnataka is expected to produce about 42.5 lac tons of sugar in 2020-21 SS, as against 34.94 lac tons produced in 2019-20 SS. Similar to Maharashtra, there is an increase in cane area and reportedly better cane yields and better sugar recoveries, which is resulting in higher estimated sugar production in the current season. Mills in the State are expected to divert about 5.41 lac tons of sugar for ethanol production in the current year as compared to about 2.42 lac tons diverted in 2019-20 SS.

These three major sugar-producing States are estimated to contribute almost 93% of the total estimated diversion of sugar into ethanol of about 20.10 lac tons in the current season.

The Government had announced two important policy decisions to improve liquidity of sugar mills during 2020-21 SS, by way of announcement of sugar export programme of 60 lakh tons and upward revision of ethanol prices for 2020-21 SS, which have been welcomed by the industry.

However, the government is yet to announce implementation of a very crucial policy decision i.e. increasing MSP of sugar. This will improve the liquidity of the mills enabling them to make timely cane payment to farmers also. The ex-mill sugar prices are already under pressure in almost all the States and to ensure that sugar mills are able to pay to farmers on time, there is need to quickly decide on increasing the MSP of sugar.

AMBROSIA

No Sugar Development Fund (SDF) Loans to Sugar Mills' for a Year

The Government has decided not to extend soft loans for at least a year to sugar mills for capacity expansion under the Sugar Development Fund (SDF), which offers financing at 2 percentage points below the prevailing bank rate.

"The decision has been taken keeping in view the prevailing market conditions of the sugar sector having surplus stocks, despite diversion of sugar and cane juice for production of ethanol. We will review it after fiscal 2021-22," said a food ministry official.

The country has 735 sugar mills with a total annual sugar production capacity of 34 million tonnes. The government has so far disbursed Rs. 8,840.53 crore to sugar mills since 1982 when the SDF was setup. "Funds have been used to scale up capacity besides modernisation of plants. So far total default has been Rs. 2,821 crore, including, Rs. 1,164 crore as principal amount. We are expediting process to recover the dues from defaulting mills," the official said.

He said the production of sugar in the 2020-21 season would likely be 30.2 million tonnes 4.2 million tonnes more than the annual domestic consumption.

ECONOMIC TIMES

Why Maharashtra Farmers are Selling Cane to Karnataka

Mills in the State have shut operations and farmers are left with standing crop

Sugarcane growers in Maharashtra are worried over the standing cane crop in their field with as many as 68 sugar mills having stopped crushing. These farmers have now reached out to mills in Karnataka.

However, with many mills in parts bordering Maharashtra closing operations, the farmers fear whether their canes on their field would be crushed at all. This comes on heals of nearly 188 sugars mills in Maharashtra crushing 951.94 lakh tonnes of sugarcane to produce 993.79 lakh quintals of sugar.

"Mills have to speed up operations to harvest all the sugarcane. A majority of mills in Satara are ensuring that they take all cane for crushing in their zone as elections for director body of mills are on cards in the next few months. Still, the problem of excess cane will prevail," says Mohan Patil, a farmer from Satara.

Lockdown Fears

In Kolhapur, farmers have already dispatched tonnes of sugarcane to sugar mills in Karnataka. "But now many mills in border areas have closed operations and farmers will have to wait till mills in the district take the cane for crushing," said PD Chavan, a farmer from Kolhapur. Many mills are speeding up the cane cutting process with harvesting machines. The State government's warning to impose lockdown, if people fail to follow the stipulated norms to curb Covid-19 spread, has added to their woes. Many cane cutting groups are already on the way back to their hometown.

According to the Indian Sugar Mill Association (ISMA), mills in Marathwada and Ahmednagar regions will start closing soon, while most mills in the sugar belt of Kolhapur, Satara and Sangli regions will continue in April. ISMA has stated that the pace of closure of mills is lower than the last two crushing seasons.

West Indian Sugar Mill Association (WISMA) has assured farmers that all available sugarcane in

the State will be crushed. “All operations including harvesting and processing will be completed. Mills will crush all available sugarcane and there will no leftover sugarcane in Maharashtra,” said Ajit Chougule of WISMA.

Distress Sale

He added that all sugarcane will be crushed by mills in the State as mills in Karnataka have almost completed crushing season.

However, farmers are not sure if their cane would be lifted by sugar mills. Earlier experiences show that farmers were pushed into distress sale after the cane began drying in the fields.

Sugarcane farming is the source of livelihood for nearly 2.5 crore people in rural Maharashtra. The industry provides direct employment to about 1,65,000 workers, besides over eight lakh workers engaged in harvesting and transport operations every year for six months.

BUSINESS LINE

India Pre-Empted UK Demand on Alcohol

India's move to cut import duty on alcoholic beverages in the Budget while simultaneously imposing an Agriculture Infrastructure and Development Cess (AIDC) of equal measure may have been taken anticipating demand by UK and the European Union to lower tariffs on alcoholic beverages under future free trade agreements (FTAs).

The FY22 Budget cut customs duty on alcoholic beverages to 50% from 150% and simultaneously imposed 100% AIDC keeping the overall tax unchanged.

Britain was expecting a sharp cut in India's basic customs duty of 150% on scotch whisky to further expand its third-largest market for scotch whisky by volume after France and the US, *Mint* reported on 12 March. However, it may have to now limit itself in negotiating tariff cuts from 50% after the change in the tax structure since domestic taxes such as AIDC are not usually part of negotiations under proposed FTAs. The same may apply to the EU with whom India also hopes to restart talks for a trade deal. India is a major market for wine, beer and champagne for European nations such as France, Belgium and Germany.

Emailed queries to the finance ministry remained unanswered. Responding to a query posed by the UK during India's recent trade policy review at the World Trade Organization (WTO) as to why New Delhi reserves its highest tariff rates for alcoholic beverages, India said: "The tariff rate on alcoholic beverages has been prescribed having regard to the nature of product and other considerations such as goods falling in the category of demerit goods. Moreover, the applied rate on alcoholic beverages is within India's commitments under the WTO."

Both countries are now engaged in deepening their trade ties through an "Enhanced Trade Partnership" as part of the development of a road map that would lead to a potential comprehensive FTA.

In a joint statement during the five-day India visit of secretary of state for international trade Elizabeth Truss in February, both sides agreed to formally launch the partnership during the visit of British PM Boris Johnson to New Delhi expected in late April. UK International Trade Minister Ranil Jayawardena is expected be in New Delhi in early April to set the stage for the summit between the two Prime Ministers.

Vinod Giri, Director General of the Confederation of Indian Alcoholic Beverage Companies (CIABC), in a statement, opposed any move to cut basic customs duty on scotch whisky and instead urged the Indian government to ask their British counterparts for removal of non-tariff barriers to allow easy export of Indian-made alcoholic beverages to the UK.

MINT

Liquor Industry Wins Anti-Trust Suit Against Uttarakhand State Arm

The Competition Commission of India (CCI) has penalised the Uttarakhand Agricultural Produce Marketing Board (UAPMB) for anti-competitive ways in the procurement of Indian Made Foreign Liquor (MFL) in the state. This is the first instance of CCI having ruled in favour of the industry against a state government commercial enterprise operating in the alcoholic beverages trade.

The CCI in its ruling on held that arbitrary procurement of alcoholic beverages by UAPMB, the

exclusive wholesale licensee for the state, amounted to an abuse of its dominant position, as it resulted in denial of market access to top liquor companies including United Spirits and Pernod Ricard. ET has reviewed the CCI order. The International Spirits & Wine Association of India (IS WAI) had approached the fair trade regulator in 2016 complaining that the government's wholesale unit was trying to drive them out of the state by favouring other suppliers and restricting their orders to minimal since the state government took over the liquor wholesale business in 2015 for a year.

"The commission notes that the main issue in the present matter is that UAPMB placed orders in a manner that was allegedly arbitrary and discriminatory, which resulted in a drop in market shares of USL and Pernod Ricard," said the CCI ruling, adding that there was an abject failure in UAPMB's distribution based on demand, which in fact was the essence of the liquor wholesale order.

The state, which moved back to being a private wholesale market four years ago, earned nearly Rs. 3,000 crore during 2019-2020 as excise revenue on liquor.

"The order validates our view that the practices and conduct of state government agencies that operate in the alcoholic beverages trade such as state beverage corporations, fall within the purview of the country's competition law, requiring them to refrain from imposing terms and conditions or demonstrating conduct that could be considered unfair or exploitative, "said IP Suresh Menon, Secretary General, ISWAI that represents Diageo, Pernod Ricard, Bacardi among other firms.

Experts said that CCI order is significant as a large portion of the wholesale business in the alcoholic beverages trade in India is now controlled by state beverage Corporations that have been granted a monopoly position.

For instance, states such as Andhra Pradesh, West Bengal, Tamil Nadu and Rajasthan control wholesale or retail or both forms of distribution. In states such as AP, top firms have been pushed out of the market similar to Uttarakhand.

ECONOMIC TIMES

Alcobev Sales May Give States' Revenue A High Too

Sales of Alcobev firms is looking up, thanks to covid cess roll back, easing regulation

With the alcoholic beverage industry starting to recover, various State governments can expect higher excise duty collection to prop up their falling revenues.

Excise duty on alcohol is the third-largest source of States' own tax revenues with an estimated contribution of between 12 per cent and 14 per cent. A RBI report (State Finances: A Study of Budgets) shows that during 2019-20, 29 States and the UTs of Delhi and Puducherry had budgeted a combined Rs. 1,75,501.42 crore from State excise on liquor. This was 16 per cent higher than the Rs. 1,50,657.95 crore they had collected during 2018-19, according to various reports.

Recovery in volumes

Alcobev volumes have started to recover, especially in key markets including Karnataka, Uttar Pradesh, Maharashtra, Kerala and Tamil Nadu. Also, with the severity of the pandemic easing, production is largely back on track, company officials of leading liquor companies and analysts say.. They add that regulatory risks have been receding with the partial or full rollback of the Covid-19 cess and favourable excise-policy recommendations in select States. This, and the likely further relaxation with regard to the on-premises channel, would drive overall volume growth, according to Analyst at Anand Rathi Financial Services.

During the pandemic, various States increased taxation on the alcobev segment through the imposition of a Covid cess or rise in excise duty. States such as Andhra Pradesh, Delhi and J&K raised taxes by 50-70 per cent by imposing a Covid cess. West Bengal and Odisha increased excise duty by 30 per cent. In other major markets, tax hikes ranged from 10 per cent to 20 per cent. While such a measure helped the States to a certain extent, it hit the alcobev industry hard. Since then, States have rolled back the duties and have allowed the opening of pubs and restaurants to serve liquor.

"I feel very positive about the fact that one or two quarters ago, we were thinking about a doomsday scenario for our industry. I think we're far better than that. I think there will be steady progress in terms of recovery," Anand Kripalu, MD and CEO of the country's largest liquor company, United Spirits, said during an investors call.

A Combination of Factors

Berend Odink, CFO of United Breweries, said the States have taken a positive stance on the entire issue.

"In the short term, we have seen, of course, a very high growth in the first one, two months, but I think the question for the State will be how well they pan out in the coming months. I think the positive stance is that they look at moderation and affordability, and together with the volume growth in the industry, it is most likely there will be longer-term growth in excise revenues. That would be my expectation," he said during an earnings conference call.

In an internal note to its investors, Anand Rathi Financial Services said some of the major reasons for the industry's return to normalcy are supply-chain normalisation, stable to soft input costs and likely less irrational taxation. "This, and easier input costs, leverage benefits and debt reduction would drive healthy, earnings growth," the internal note said.

In an earlier interaction, Pernod Ricard's CFO for Indian operations, Rajesh Mishra, said that the company had taken several initiatives to drive towards normal business.

"We reconfigured and reset our business operations quickly (from consumer demand to product availability to business enabling operations) towards contactless commerce, with nerve centre management model to set right trigger points to act with speed, agility & adaptiveness. All these, enabled us to come back very close to the pre-Covid level of business performance," Mishra said.

According to analysts, in terms of macro-economic drivers, opportunities for growth appear healthy for the alcobev segment in India.

The market here has sufficient drivers: a young demographic (median age: 28 years), an increasing number of people entering legal drinking age (15 million per year), low per-capita consumption and premiumisation potential on shift from illicit liquor to branded alcobevs.

BUSINESS LINE

Restaurants Cheer as Delhi Lowers Drinking Age to 21

No Government run liquor shops anymore

In a bid to raise the amount of excise duty collected from liquor sales, the Delhi government has lowered the legal drinking age in the Capital to 21 years, from the earlier 25. It will also shut down government-run stores, which currently account for close to 60 per cent of the 850 outlets serving consumers.

The move is expected to benefit restaurant and pub owners, apart from opening up new business opportunities for private liquor store businesses.

Manish Sisodia, Deputy Chief Minister of Delhi, announced at a press conference that a new excise policy has been approved by the Delhi Cabinet on

the basis of recommendations made by a Group of Ministers. "It was (also) decided that no new liquor shops will be opened in the Capital, and the government will not run any more (such) shops," he said.

The move was cheered by restaurant owners in the Capital. Apart from the prospect of greater footfall, pub and bar owners are excited as they can now also serve the student community. According to the Delhi government's estimates, the move will help it add 20 per cent more excise duty revenue in the coming months. In 2019-20, the local administration had collected some Rs. 5,400 crore in revenue from liquor sales.

"The National Restaurants Association of India (NRAI) warmly welcomes and profusely thanks the Delhi government for this progressive and forward-thinking decision. We have been making requests for amending some of the archaic laws for a very long time and we are very pleased that our efforts have finally borne fruit," said Anurag Katriar, President, NRAI.

Rahul Singh, Co-founder of Beer Cafe, a pubs chain with over 40 outlets, termed the changes progressive. "Lowering the age to 21 is progressive and pragmatic. In any case, underage consumers were breaking the law in unsupervised spaces such as house parties. This change in policy would now legally permit license holders to serve alcohol safely in a regulated environment under supervision," he said. Further, through the new policy, the government will move out of the liquor business in Delhi. No new liquor stores will be added by the Delhi government in the future.

The move was a result of recommendations made by an expert panel that the government had formed. The panel had also recommended issuing retail licenses to departmental stores.

According to Sisodia, the new measures are aimed at reducing the scope of the illegal liquor sales racket.

While there are some 850 legal outlets, close to 2,000 illegal ones cater to the market, leading to a huge loss in excise revenue. Inconsistent distribution of outlets in the city is a key factor that has given rise to this situation.

BUSINESS STANDARD

Indian, Foreign Liquor Companies Battle For Defence Stores Business

The ban on imported liquor at Government controlled Canteen Stores Department (CSD) has Indian and foreign spirits manufacturers, vying for shelf space in retail stores for the armed forces.

Following the ban of 'direct imported' items at these stores that includes bottled-at-origin liquor brands such as Johnnie Walker, Chivas and Glenfiddich, a consortium of domestic manufacturers has written to the government stating that there are several competing Indian products currently available in the market to take their place.

"It has been brought to our notice that some vested interests have requested resumption of supply of imported liquor to CSD on grounds that there are no competing Indian-made liquor products of same quality and price as imported Scotch whiskies," said the Confederation of Indian Alcoholic Beverage Companies (CIABC) in the letter.

"Rebutting this, we reiterate that today India produces internationally acclaimed malt whiskies like Amrut Amalgam, Amrut Fusion, Paul John Bold and Rampur," it added.

The hardest hit by the ban Pernod Ricard and Diageo that together controlled around 50% of the

total imported spirits sales at CSD canteens. "The size of the bottled-at-origin segment at CSD canteens is around two lakh cases, which translates to 1.5% of the overall volume mix within CSD alcohol sales," said an industry executive. "In terms of value, it would be around 3% of the total liquor sales. CSD sells around 11 million cases of alcohol each year, half of which is rum, a military favourite.

AMBROSIA

Vinexpo India to be held in Delhi

New Delhi will host Vinexpo India from 9-11th December 2021. Vinexpo India will take place in partnership with Sial. In this future event, Vinexpo's live show format would be introduced in India for the first time.

The future event is expected to include both wines and spirits and is expected to attract participation of both international and domestic wine producers. Like in Vinexpo's other shows, at Vinexpo India also producer stands will run alongside master classes and tastings.

Vinexpo's CEO Rodolphe Lameyse has placed his trust in the growing Indian market for wines.

SPIRITZ

Now A Bourbon Focused on Female Taste

An all female team from a California based distillery named Lynxx Spirits has come up with Lynxx Bourbon. This bourbon is made with focus on female taste preferences.

This handcrafted, straight bourbon is the product of maturation in traditional American white oak barrels. The drink represents a complex taste profile and aroma of creamy vanilla and warm spices with no added colour, preservative, rye, sugar or gluten.

The bourbon is packaged in 750ml. The drink is 80 proof and is ideally served straight up or on the rocks or can be enjoyed as a mixed cocktail. Lynxx Bourbon is presently distributed within California and on the company's website at a price of 79.99 USD.

The Founder of Lynxx Spirits, Rachel Svoboda floated the company with the idea of empowering women and eliminating the stereotype that women only enjoy vodka wine and fruity cocktails.

SPIRITZ

Excise Policies of Three States Come Up with New Provisions

(Uttar Pradesh, Uttarakhand & Punjab)

The 2021-22 excise policies of the three major states of India were announced in the recent past. Here we present a comparative study of the salient features of the excise policies of UP, Punjab and Uttarakhand, which can help the alcobev players operating in any of these three states or envisaging to enter any or all of these markets to get a ringside view of these state governments' policies pertaining to the alcobev industry, for the forthcoming fiscal.

In the 2021-22 excise policy of UP, direct dispatches of distilleries to district level wholesalers from their FL-3/3A license premises rather than routing through FL1/1A license premises will be permissible. Moreover, the excise duty on beer will be reduced from 280 percent to nearly 200 percent and its shelf life would be nine months. In Punjab's forthcoming excise policy, the annual fixed license fee for bars in hotels & restaurants has been slashed by around 30 percent and for marriage palaces this fee has also been reduced by 20 percent. In Uttarakhand's forthcoming excise policy, country made liquor outlets have been permitted to sell beer. The salient features of these policies are given below:

Uttar Pradesh

- The retail licensees of the districts in the state shall be permitted to transfer not more than 20 percent of their monthly guaranteed quota for country liquor or equivalent quarterly revenue fixed for foreign liquor, beer and model shop, to any other shop or shops on required approval and payment of prescribed fee .
- Direct dispatches of distilleries to district level wholesalers from their FL-3/3A license premises rather than routing through FL1/1A license premises will be permissible.
- A license shall be issued for purchase, transport and possess stocks in excess of the prescribed retail sale limit to individuals, on payment of Rs. 12,000/- license fee and a security amount of Rs. 51,000/- per year, subject to the conditions prescribed.
- The excise duty on beer will be reduced from 280 percent to nearly 200 percent and its shelf life would be nine months.
- The power for renewal of microbrewery licenses shall be delegated to District Collector.
- To provide good quality liquor at economic prices, U.P. Made Liquor (in Tetra-pack and of 42.8 percent strength only) made from grain ENA shall be sold at an MRP of Rs.85 through country liquor shops.
- Wine made out of locally produced fruits shall be exempted from excise duty for a period of five years. Vintners shall be allowed the retail sale of wine. Wine tavern shall also be allowed in their premises.
- Excise Commissioner will be authorised to create new shops equivalent to 2 percent of the total number of shops settled in 2020-21. Non-renewed and new shops shall be settled through e-lottery / e-tender. Annual license fees of country liquor, foreign liquor retail shops and model shops for 2021-22 fiscal to be increased by 7.5 percent. No increase in license fee of beer retail shops.
- FL-2D licenses for sale of imported liquor (BIO) shall be discontinued. Instead, registered customs bonds will supply imported liquor (BIO) directly to wholesalers. The custom bond warehouses located in the state will pay a permit

fee of Rs.300/- per bulk litre on sale of imported liquor (BIO) to other states. • Brand registration, label approval, bar and microbrewery licenses will have the option to be renewed up to 3 years instead of requiring approvals every year.

- Advance storage of foreign liquor, beer and wine for the 2021-22 fiscal are being allowed from 15.02.2021. Also, to ensure availability of liquor during the beginning of the year, rollover process of residual stock on 31st March for the next year is simplified and there will be no roll over fee for carrying forward of these stocks in the new fiscal.
- To encourage exports from the state, brand and label approval process for exports to other states and countries are being simplified. Keeping in view the complex process of trade mark registration and the time taken, brand registration will be permissible on submission of proof of filing of application for trademark registration.
- The provision that no liquor shop shall be opened within 5 kilometers of the border of another district without the consent of the collector of both the districts will be done away with.
- Transport of more than one consignment of liquor relating to a district will be allowed in one vehicle. Manual verification and return of excise transport passes will be discontinued and the verification will be done online.
- Sale of imported liquor (BIO) and Indian made foreign liquor in Scotch category, with maximum retail price of Rs. 2,000/- or more, will be permissible in mono-cartons.

Uttarakhand

- The application fee to apply for license of a liquor outlet in the state has been increased from Rs. 40,000 to Rs. 50,000.
- The Government approved proposal of licensing of liquor vends for two years instead of one year through the process of e-tendering.
- Country made liquor outlets have been permitted to sell beer. Liquor shops have been permitted to remain open from 10 am to 10 pm. In the city areas, liquor outlets will be allowed to operate till 11 pm from the new financial year, under the new excise policy of the state.

Punjab

- The annual fixed license fee for bars in hotels & restaurants has been slashed by around 30 percent and for marriage palaces this fee has also been reduced by 20 percent. The fee on consumption of liquor (assessed fee) has also been reduced.
- Renewal of existing vends subject to lifting of additional liquor by the licensees. The government has not increased the incidence of taxes on country liquor, thereby maintaining the last year liquor prices for the consumers. There would be no increase in sale price of liquor in Punjab, in the forthcoming fiscal.
- The wholesale trade of liquor would be monitored online, replacing the present L-13 wholesale licensees. The conversion quota has been increased from 15 percent to 20 percent. The fix and open quota percentage has been kept at 30:70 as existing.
- The government proposes to collect the additional revenue by increasing the quota of Punjab Medium Liquor by 12 percent, Indian made Foreign Liquor (IMFL) by 6 percent and beer by 4 percent over the last fiscal respectively.
- In a first, the department has proposed to impose a quota for foreign liquor in Municipal Corporation areas and 'A' Class municipalities.

Delhi Lowers Bar, Cuts Legal Age for Drinking to 21 Years

Delhi has lowered the minimum age for consumption of liquor to 21 years, from 25, in sync with the age set by neighbouring Uttar Pradesh.

The National Capital will also introduce the concept of age gating debarring any person below 21 years of age and without adult supervision from a restaurant serving liquor.

The measures are part of an excise policy the Delhi cabinet approved. Under it, the government will not give permission to open any more liquor outlets. It will also withdraw from the liquor retail business, and allow private players to run vends, a decision that deputy Chief Minister Manish Sisodia said would increase Delhi's revenue by Rs. 1,500 to Rs. 2,000 crore a year.

Addressing a press conference, Sisodia said, "To stop harassment of people and establishments, consumption age will be the same as a majority of Indian states at 21, like Noida in Uttar Pradesh. New rules will be introduced to make sure that people who are under the age of 21 cannot get access to the establishment that serves liquor, without supervision." He said Delhi would be the first city in India to introduce the concept of age gating. So far, people under the legal age were not served alcohol, but were allowed to enter such restaurants without adult supervision.

The minister said age gating would help ensure there was no underage drinking in Delhi. The standard operating procedure for this will be created in consultation with the industry, he said.

Excise policy reforms that the Aam Aadmi Party Government has introduced had been on the anvil for over a decade.

The decision to exit the liquor retailing business, as per the government, will ensure better revenue for Delhi. So far, 60% of the retail outlets were run by the government and 40 % were private.

Sisodia said, "We have decided that in Delhi, no new liquor shop will be allowed to open. We have also noted that 40 % of private liquor shops give more revenue than state government-owned shops because (of) revenue leakages in government shops."

Sisodia said, "We have also decided that any liquor shop should be of minimum 500 square feet. These shops will not have any counter facing towards the road. Liquor sale and pick-up will only take place inside the shop and nothing will take place outside the shop. The liquor shop owners will have to ensure law and order outside the shop." These measures will help ensure the dignity of the consumer, the minister said. "Current retail experience is like a jail. When you go to a shop, there is a grill and people rush and throw money to buy liquor. There is no dignity."

ECONOMIC TIMES

Delhi Govt Plans Annual Liquor Licence for Party Venues

The Delhi Government, in its new excise policy, is set to introduce an annual licence system allowing banquet halls, farmhouses, motels and other party venues to serve liquor, instead of getting permissions for each event.

A report by a group of ministers, which will form the basis of the Delhi Excise Policy, 2021, has also recommended doubling the free for a one-time P-10 licence a permit to serve alcohol in private parties hosted at home or any other non-licensed premise to Rs. 10,000.

The report, seen by HT, mentions starting a new annual liquor licence specifically for banquet halls, farmhouses, party lawns and other such venues,

the fee for which will depend on the carpet area of the premises. For venues with a carpet area of up to 5,000 square feet (sq ft), the annual liquor licence fee will be Rs. 5 lakh. This charge will be Rs. 10 lakh for those above 5,000 sq ft and up to 15,000 sq ft and Rs. 15 lakh for areas over 15,000 sq ft.

"No separate P-10 licence will be required at any event held at these venues once the yearly licence is acquired. The area will be calculated on the basis of the entire usable carpet area, which is leased out for events and gatherings. In case of venues with multiple floors, the carpet area of each floor will be calculated," read the report, prepared by a group of ministers, headed by Deputy Chief Minister Manish Sisodia.

It further stated that venues that conduct multiple events will have to take this mandatory licence in order to serve liquor on their premises.

Delhi has around 300 banquet spaces, and most of them have multiple halls within their premises, taking the total number of halls to over 1,000.

But the government has also not completely done away with P-10 licence as people who are organising smaller parties, of about 50-100 people, but may not want to book a banquet hall or a public venue.

"For an in-house party or any function in any community centre, the P-10 fee will be applicable at Rs. 10,000 irrespective of the number of guests. To serve liquor in banquet halls, party places, farmhouses, wedding/ party/event venues, the one-time P-10E licence fee will be Rs. 50,000 per event, if the said venue does not hold a regular annual licence," the report said.

At present, the P-10 licence can be obtained for Rs. 5,000 to serve liquor in any party, function, marriage and so on, at non-licensed premises, anywhere in Delhi, except for public parks.

The existing P-10 licence fee for motels, banquet halls and farmhouses is Rs. 15,000 for an event.

Ramesh Dang, President of Community Welfare Banquet Association of Delhi, said the move is in favour of owners of such venues, but added the general public may have to bear the extra cost.

"Even though they have increased the P-10 licence fee, the move is still favourable for us. All banquet halls, farm-houses and other such party venues, owners will shift to the annual licence system because it is hassle-free. It will allow us to charge for alcohol and the service provided to serve it which means the cost of alcohol will be relatively more expensive at our venues, just like it is charged in hotels. The cost will be higher than the Maximum Retail Price (MRP) of the bottles at our venues not only because of the service provided, but also because we will have to recover the annual licence fee paid to the government," he said.

Mandeep Singh, the owner of Bel-La Monde Hotels Private Limited, which also owns several farmhouses and banquet halls, said the process will now be tension free for party hosts.

"Most people are unaware of the procedure, and they used to feel hassled by the paperwork. Now, those who are willing to shell out slightly more can pay us, and we will take care of the liquor at the event," said Singh.

HINDUSTAN TIMES

Uttar Pradesh Government Prescribes Limit for Stocking Liquor at Home

The Uttar Pradesh (UP)'s excise department has issued the notification for setting limits for stocking liquor at home. The liquor cannot be sold to any person by retail shops in excess of quantities prescribed in the new notification, informed Sanjay R. Bhoosreddy, Additional Chief Secretary, Excise Department, UP.

Now a person cannot possess more than 5 bottles of 200 ml of plain country liquor. The prescribed limit for foreign liquor is 1.5 litres each of Indian made and imported foreign liquor, 02 litre each of Indian made and imported wine, 06 litres each of Indian made and imported beer, 1.5 litres of other kind of Indian/imported liquor and 06 litres of low alcoholic beverages. In case of any violation of the said notification, legal action under section-60 of the United Provinces Excise Act, 1910 will be taken against the concerned person/s.

Any person intending to purchase, transport and possess the liquor for personal use in quantities more than the prescribed limit can obtain a license in 2021-22 with compliance with stipulated norms and by depositing the required fee. Security shall be deposited in the form of FDR pledged to the concerned District Excise Officer. Only one Personal Home License shall be granted to a person for his main residence.

Within the premises approved in the license, adult family members, relatives, family guests and friends of licensee who are not below the age of 21 years will be allowed to consume liquor with his/her consent without making any payment in cash or kind. Personal Home License shall not be granted to a person for his farmhouse or guest house. The applicants who are income tax payee for the last 5 years and of which have paid income tax under the slab of 20 percent for at least 3 years shall be eligible for home license.

The self attested copies of PAN and AADHAR of the applicant must be enclosed with the application. In case of any violation of conditions of Personal Home License, action may be taken against the licensee under relevant sections of the United Provinces Excise Act, 1910 and Indian Penal Code.

SPIRITZ

Health Liquor Permits in Gujarat Rising

The number of health liquor permits issued by the Gujarat government has doubled over the last three years, which stands contrary to the statement of the Gujarat's Chief Minister Vijay Rupani that his government will not relax prohibition laws in Gujarat.

The CM of Gujarat has informed in the assembly that during 2017-18, 1717 new health liquor permits were issued in Gujarat; during 2018-19, 968 new liquor health permits were issued in Gujarat, and during 2019-20 3,587 new liquor health permits were issued in Gujarat. In 2017-18, 2018-19 and 2019-20, 6,259; 6,309 and 10,189 old liquor permits were renewed respectively, in Gujarat.

The CM of Gujarat, in a written reply to an unstarred question, informed that the Gujarat government earned revenues of Rs 19.07 crore during those three fiscals through issuing new liquor permits and renewing existing ones.

SPIRITZ

Last Date for Linking PAN With Aadhaar Extended To 30th June, 2021

The Government extended the deadline for linking of Aadhaar with Permanent Account Number (PAN) by another three months to end June, 2021.

The finance ministry said in a statement that representations were received from taxpayers seeking a further extension of the deadline because of the pandemic.

"Keeping in view the difficulties faced by the taxpayers, the Central Government has issued notification extending the last date for the intimation of Aadhaar number and linking thereof with PAN to 30 June, 2021," the ministry said.

Mint reported earlier that the finance ministry was weighing requests for an extension and was expected to make an announcement before expiry of the 31 March deadline.

The government has made several extensions to the deadline since July 2017 to facilitate the linking of the two identity numbers. Linking of the Aadhaar number with PAN is expected to eliminate duplicate PAN numbers and help in tax assessment and administration.

PAN is mandatory for a host of financial transactions including opening of bank accounts, cash deposits in bank accounts, opening of bank accounts, transaction of immovable properties and dealing in securities. PAN card is also a means of photo identification accepted by all government and non-government institutions.

Since Aadhaar is biometric-based and cannot be obtained based on any other identification document, linking the two is considered crucial for tax administration.

In amendments approved at the time of passing the Finance Bill 2021 in Parliament, the government introduced a Rs. 1,000 fine for missing the deadline for linking Aadhaar with PAN.

Considering the Covid-19 related hardships faced by individuals and businesses, the government took several relief measures in FY21 including extending due dates and waivers of late fees as well as moderation of tax rates.

The Central Board of Direct Taxes said that tax refund of more than Rs. 2.24 trillion was made to more than 23.7 million taxpayers during the financial year til 29 March, 2021.

With the closure of the financial year, the time for making investments for claiming deductions to incomes earned in FY21 has also expired.

MINT

PF Contribution Cap for Tax Free Income Doubled

In a major relief to large number of middle to high income earners, the Government has doubled the limit of Provident Fund (PF) contribution on which interest income will remain non-taxable. While in Budget FY22, the Finance Minister proposed to tax interest income on own contribution of employees exceeding Rs. 2.5 lakh in a year, the govemment in its amendments to the Finance Bill, 2021 proposed to raise the limit of Rs. 5 lakh. This will be applicable for all contributions beginning April 1,2021.

"Provided further that if the contribution by such person is in a fund in which there is no contribution by the employer of such person, the provisions of the first proviso shall have the effect as if for the words 'two lakh and fifty thousand rupees', the words 'five lakh rupees' had been substituted," the amendment to the Finance Bill, 2021 read.

The decision to increase the cap on EPF contributions that will have tax exempt interest income, from 2.5 lack to 5 lakh per annum, will ensure that individuals earning annual basic salary of up to Rs. 4.66 lakh or total salary of around Rs. 83 lakh (if basic is 50 percent of CTC) are covered under it.

In the Budget proposal last month, the government had proposed, "to restrict tax exemption for the interest income earned on the employees' contribution to various provident fund to the annual contribution of Rs. 2.5 lakh."

What this means that if an individual's own contribution to the employees' provident fund in a month is up to Rs. 41,666 (Rs. 5 lakh in a year), there will be no tax on the interest income. However, if the contribution exceeds that, then interest income on additional contribution will be taxed. This means that individuals having monthly basic salary of over Rs. 3,47,216 will now get impacted by the move as their annual EPF contributions (at the rate of 12 per cent of basic salary) would exceed Rs. 5 lakh.

So, if an individual contributes Rs. 121 lakh in a year, the tax will be applicable on interest income on Rs. 7 lakh (Rs. 12 lakh to Rs. 5 lakh). While the interest income on Rs. 7 lakh would amount to Rs. 59,500 (at EPF interest rate of 85 percent), the tax payable on the same would be Rs. 18,450 (at marginal tax rate of 30 per cent).

Justifying its move in February, the government stated that it had found instances where some employees were contributing huge amounts to these funds and getting the benefft of tax benefit with an aim to exclude HNIs from the benefit of high tax-free interest income on their large contributions the government proposed to impose a threshold limit of contribution at Rs. 2.5 lakh for tax exemption. It has now, however, been raised to Rs. 5 1akh.

On the move, Finance Minister Nirmala Sitharaman, said: "This fund is actually for the benefit of the workers, and workers are not going to be affected by it.. it is only for big ticket money which comes into it because it has tax benefits and also (is) assured about 8 per cent return. You find huge amounts, some to the extent of Rs. 1 crore also being put into this each month. For somebody who puts Rs. 1 crore into this fund each month, what should be his salary. So for him to give both tax concessions and also an assured 8 per cent return, we thought this is probably not comparable with an employee with about Rs. 2 lakh."

INDIAN ECONOMICS

Indian Whisky Darling of Global Spirits Market

The global whisky market is projected to grow at a CAGR of 5.51% during the forecast period. The changing life styles, consumption habits of whiskey, high disposable income, growing affordability of whiskey, and increasing demand for premium whiskey increased the whiskey market growth.

Europe holds the largest share in the whiskey market with almost 34% market share. Germany, Italy, Spain, and France are the major countries for whiskey production and consumption in this region. Europe is also the largest producer and consumer of whiskey.

Growing Preference for Organic Whiskey

Demand for variety in scotch whiskey from fast-growing emerging markets and the request for lower alcohol varieties and organic whiskey among health conscious drinkers are the drivers moving the market forward. Moreover, with the increasing focus on healthy living across the world, people are preferring this variety of whiskeys. The value of organic alcoholic beverages exported from Denmark increased to 129.60% from the year 2013 to 2017; this has driven the increase in preference for organic whiskeys of Denmark and other countries from the rest of the world. Companies, such as Bainbridge Organic Distillers, have developed artisan-distilled spirits that are made from USDA Certified Organic wheat, barley, triticale, and corn, grown especially for their distillery, and the quality of each of their products is a direct reflection of the superiority of their grains.

Indian whisky was never given its due in the global spirits market because it was produced using molasses. But companies like Pernod Ricard changed the name of the game by using grain for producing whiskies. Now companies like Amrut Distilleries, Paul John and Radico Khaitan have put India on the world whisky map with their world class whiskies. Diageo, ABD, Pernod Ricard, Radico Khaitan are leaders in the volume game and companies like Bacardi and Beam Suntory add weight to the whisky market with their premium whisky portfolios.

Europe Holds the Major Share in Whiskey Market

Europe is the market leader in whiskey production with the largest market share. Germany, Italy, Spain, and France are the major countries for whiskey production and consumption in this region. Europe is also the largest producer and consumer of whiskey. North America is the other major region in the whiskey market. South America accounted for one-tenth of the global market share and is a slow-growing market for whiskey. Asia-Pacific is the fastest growing market for whiskey production and consumption. The regional whiskey market is largely supported by the high adoption rate of western culture and lifestyle, large population, and the growing middle-class households. China, Japan, and India are the big markets in this region. India is the largest whiskey consumer in the Asia-Pacific region.

Competitive Landscape

The global whiskey market is witnessing high competition owing to the diversified product portfolio of key players and growing investment in strategic expansion which leading to intense competition among the existing players.

In addition, key players are focusing on online distribution channels for online marketing and branding of their products to expand their geographical reach, as well as customer base. Key players operating in the global whiskey market include Diageo PLC, William Grant & Sons Ltd,

Pernod Ricard SA, Suntory Beverage & Food Ltd, etc.

Introducing new flavours and mentioning origin of the whiskey is boosting whisky sales. Whisky market is a highly recognised distilled alcoholic beverage among all premium brands and healthy consumers of the same. Being famous among beverage consumers it is that they are supporting the market growth. Many whiskey producers are focusing on exploring various whiskey tastes, character and differentiation which has resulted in the launch of new whiskey brands giving an increase product availability option consequently giving more choice and more availability to consumers thereby supporting the market growth of whiskey.

IWSR data showed double-digit growth for Indian whisky last year, and this market continues to expand despite considerable roadblocks

The importance of the Indian whisky market to the global well-being of the whisky category cannot be overstated; nearly one in every two bottles of whisky bought around the world is now sold in India, and seven of the top ten global whisky brands are Indian.

Indian whiskies, notwithstanding, India is still the sixth biggest global destination for Scotch whisky. The Indian influence on the whisky market is not waning either, with the IWSR reporting double digit growth last year.

India's performance was mildly amplified by the boost that the regularisation of the Uttar Pradesh market gave sales, but the 11% volume rise has still highlighted the opportunities that continue to exist for whisky in India. Demand is being fuelled by a rising consumer base of young consumers who are becoming more affluent in a country where the global reach of some of the smaller cities is becoming more significant, diluting the historical whisky sales bias towards the big three cities of Mumbai, Delhi-Gurgaon and Bangalore.

According to IWSR figures, 93% of all whisky traded in India falls into the 'value' segment, and that leaves plenty of scope to develop the higher end segments.

These new affluent consumers prefer premium products, and the value of the whisky market in India increased by 17% last year. This is a long-term trend, with the average price of whisky in India nearly doubling in ten years to US$7.18 for a litre. The appeal of the Indian whisky market is not just that all price bands are thriving, but just how early in the premiumisation cycle the market is in; according to IWSR figures, 93% of all whisky traded in India falls into the 'value' segment, and that leaves plenty of scope to develop the higher end segments.

Selling alcohol in India is challenging because the local governments are intrinsically anti-alcohol, something that is partly driven by philosophical reasons, but also because a hard-line attitude to

alcohol is a political vote winner. In India, each of the twenty-nine states govern their own alcohol policy and regulations. There is no legitimate cross-border trade allowed, and state governments control taxation, production, the route-to-market, regulation and pricing. If a company wanted to have national reach in India, they would need to have an operation in each state - a process that is both bureaucratic and expensive.

To further complicate matters, marketing alcoholic drinks brands in India requires considerable ingenuity: India is %dark market' where advertising and promoting alcohol is prohibited; as such, companies marketing and launching new brands do so prudently with good liquid, good packaging and good distribution.

Allied Blenders & Distillers (ABD) demonstrated this last year with the fabulous success of their new premium range of whisky, Sterling. Sterling was a good, well presented product and with ABD's distribution channels, they were able to persuade retailers to put the whisky on their shelves at the cost of sacrificing the shelf space of another of their brands.

There may be ways of improvising, but India remains a difficult trading environment for drinks companies. These conditions are compounded by the fact that the law makers do not legislate with the commercial sensitivities of drinks companies in mind: regulations, tax rises and rule changes can be introduced at damagingly short notice.

The market was blighted in 2017 by unexpected monetary reform as well as a Supreme Court ruling imposing a ban on liquor vends (retail outlets) within 500m distance of any national or state highway. Rules were later clarified to permit bars in hotels *to* sell alcohol, and the industry deployed their initiative to overcome the ruling. National Highways were quietly exempted by changing them to City Highways, while one resourceful vendor, sited 50m from a liable highway, is said to have created a 501m path that wound its way to his store so that he would still be eligible to continue to trade. Despite this resilience, it is estimated that 6-8% of outlets closed and the vibrant Indian whisky market flattened.

Conversely, India's 2018 results were helped by no new regulatory or tax interference and the market progressed accordingly. The premiumisation process resumed, with the top end of the 'Bottled in India' market (selling for around a 1000 a bottle) flourishing. This has prompted the emergence of some pioneering and cult Indian whiskies; companies like John Distillers and Amrut Distillers are raising the bar for Indian whisky.

Many of these new 'young brands' are helping to contemporise the category and broaden the appeal away from the 35-year-old plus core users to the rapidly expanding younger age segments. Attempts are also being made to create a buzz around the use of whisky in cocktails, which will make the category more relevant not just to a younger drinker, but also to the female market. There is already evidence that in the higher echelons of Indian society, women are developing a taste for top-end whiskies.

The innovation in the category is helping Indian whisky to carve out its own identity, and in the longer term this will enhance its reputation among whisky connoisseurs from further afield. To date, Indian whisky exports have tended to follow the path of the large Indian expat communities, particularly in the Gulf. They have also attracted a following in some African markets, serving as entry level brands for those consumers wanting to upgrade from the illicit spirits market. The next generation of high-end Indian made malts are already showing that they are of a sufficient standard to capture an audience in Western markets.

Selling alcohol has never been easy in India. E-

commerce and home deliveries are not allowed. Many state governments have turned against booze because prohibition is a potential vote winner. Each of the 29 states has its own policies to control the production, price, sale and taxes on booze.

Yet, by volume, India is the world's ninth-largest consumer of all alcohol, according IWSR Drinks Market Analysis. It is the second largest consumer of spirits (whiskey, vodka, gin, rum, tequila, liqueurs), behind China. India consumes more than 663 million litres of alcohol, up 11% from 2017. Per-capita consumption is rising.

India consumes more whiskey than any other country in the world - about three times more than the US, which is the next biggest consumer. Nearly one in every two bottles of whiskey brought around the world is now sold in India. When worldwide booze consumption dipped in 2018. India partly drove a 7% uptick in the global whiskey market.

Five southern states - Andhra Pradesh, Telangana, Tamil Nadu, Karnataka and Kerala - account for more than 45% of all liquor sold in India. Not surprisingly, more than 10% of their revenues come from taxes on liquor sales, according to the research wing of Crisil, a ratings and analytics firm.

A third of Indian men drink alcohol, according to a new government report. More than 14% of all Indians, aged between 10 and 75, drink. The World Health Organization (WHO) estimates 11% of Indians are binge drinkers, against the global average of 16%.

Most worryingly, a third of the drinkers consume cheap and dodgy locally brewed or country liquor, responsible for several tragedies, involving adulteration. Some 19% of alcohol users are dependent on it, according to the report. Around 30 million people consume alcohol in a "harmful manner".

Also, the WHO reckons that "unrecorded" alcohol makes up more than half of all alcohol consumed in India. Locally brewed liquor, for example, is not recorded or taxed in some states. A survey by the International Alliance of Responsible Drinking in 2014 found a large number of drinkers preferring country liquor or homemade alcohol, often counterfeit and contraband.

Indians are drinking more than before. A recent study of liquor consumption in 189 countries between 1990 and 2017 found that consumption in India had grown by 38% -from 4.3 litres a year per adult to 5.9 litres. Booze is also becoming increasingly affordable: research found that beer, for example, has become more affordable in lower and middle income countries as compared to high income countries.

It appears that everyone in India is going thirsty for alcohol. With 8.8% of growth (CAGR), Indian alcohol market is just exploding.

It is the third largest liquor market globally, the market size of liquor sales in India is over US $35 billion. A little over 600 million people in India are over the legal drinking age in India.

Other than India being the largest consumer of Whiskey in the world, Wine is becoming extremely popular especially among women in India. There is 22.8% growth in the Vodka's demand. The punch here is that with the growing middle class population, these current numbers will pale in coming years. The consumption of alcohol in India will reach 16.8 billion litres by the year 2022.

Most of the sale of alcohol in India is coming from Tier 1 and Tier 2 cities. Growing income leading to rising spending power mixed with access to alcohol at restaurants and liquor stores is the reason for such a remarkable increase in demand.

The share of alcohol imported into India is 0.08% of the Indian market which is negligible primarily because the heavy duties and taxes raise its price.

But, nevertheless, there is a sizeable income group which can easily afford the expensive brands. According to the study conducted by Business Wire, a Berkshire Hathaway Company, "high demand for expensive liquor, the market scenario seems to be very optimistic in the near future".

However, stakeholders in the market are aware of the constant threat of legislative intervention: recently, Goods and Services Tax (GST) had initially excluded alcohol, but could be updated to include it. Alcohol will be not be included in GST because that will require a new bill to be passed by both houses of parliament; the real threat to alcoholic drinks companies is whether extra-neutral alcohol (ENA) used during the manufacture of alcoholic liquor is subject to GST, since no input credit will be available to manufacturers.

This danger is genuine because during the election, the tax slab/rate on some goods was lowered to win votes, and this has caused a shortfall in the monthly revenue targets for the GST. The taxing of *'ENA'* in the highest bracket of 18% would go some way to making up the deficit. The decision will be made by the GST council, made up of the finance minister of central government and finance ministers of all states. For the tax to be implemented, at least two thirds must agree to it.

The proposal to levy GST on extra-neutral alcohol was on the agenda at the last meeting of the council, but time ran out and the item could not come up for discussion.

Currently, the Indian Whisky category is strong; its innovation is bringing new consumers into the category and is building its profile among whisky purists, both internally and externally. Whether this trend will continue with the ever-present threat of Federal or State disruption remains to be seen; the category is prone to taking one step forward and two steps back following government regulation or tax changes. India consumes 48% of the world's whisky, making it the sixth largest importer of Scotch, so it is not surprising that the country also produces a lot of the spirit.

In fact, seven of the top 10 global whisky brands across the globe are Indian, says Sangram Sinha, general manager and head of international business at Pernod Ricard India, which owns Seagram's whiskies.

The importance of the Indian whisky market to the global well-being of the whisky category cannot be overstated.

Key Alcobev Trends in 2021

An IWSR study identifies Key Alcobev trends In 2021

Is at-home consumption the new drinking occasion?

Channel shifts and the impact of e-commerce on on- and off-channel splits

Covid-19 lockdowns and the subsequent rise of the at-home drinking occasion forced many brand owners to shift channel investment into e-commerce by necessity. In fact, the value of the e-commerce market in ten core countries grew by an estimated 40% in 2020, according to IWSR data. Consumers have now become increasingly comfortable with purchasing alcohol online: IWSR data shows that in the US, for example, 44% of alcohol e-shoppers only started buying alcohol online in 2020, compared to 19% in 2019.

As we move into 2021, channel shifts will continue to evolve. E-commerce will remain a critical investment, and going forward, will require a nuanced strategy that's coordinated globally but deployed locally, taking local laws into consideration.

As at-home consumption increasingly becomes an occasion in itself, brand owners will need to re-evaluate their balance of investments between bricks & mortar and on-premise channel splits. Plans will need to be adapted to take into account a smaller on-trade sector, which is especially important for product activation strategies.

How will premiumisation strategies evolve?

Brand owners will need to take a more nuanced approach to premiumisation

The pandemic has had a nuanced impact on premiumisation trends, and going into 2021, brand owners will need to apply a more considered approach to premiumisation strategies, dependent on country, channel, category and demographic combinations. We will likely see three price trends moving forward:

- Premiumisation continues: Despite the impact of Covid-19, some consumers, especially those in developed markets, would have benefitted financially from lockdowns, where spend on commuting, social activities or holidays would have decreased. Premiumisation trends will continue in some categories and markets, such as for agave-based spirits in the US and blended Scotch in the UK.
- Return to tried and trusted: Some consumers will return to well-known brands and avoid experimentation or high-level spending. In some cases, this may be a result of changes in the bricks-and-mortar experience, where social distancing restrictions or personal preferences may make consumers less inclined to browse in shop aisles. This pricing trend will likely be apparent in categories such as rum in France and still wine in Japan.
- Democratisation or down trading: Countries hard-hit by the economic impact of Covid-19 will likely see more consumers opting to down-trade as they focus on value-for-money options. Limited furlough schemes or a higher level of personal taxation may create longer-term income pressures for consumers in both less developed as well as developed countries.

How will a shifting global political landscape impact the beverage alcohol market?

Changes in leadership, diplomatic relationships and legislation come into focus

- New leadership in the US brings former policies of protectionism into focus, and is raising key questions, such as whether the new administration will review beverage alcohol

import duties, or how tariffs imposed by the US may differ between the UK and the EU.

- Changes in global relationships with China and shifts in trade policies, such as those on Australian wine exports, will continue to impact the global industry landscape.
- Post-Brexit discussions will be key for arrangements within Europe. Industry stakeholders will be paying close attention, for example, to developments that could impact trade flows, as well as future EU laws on alcohol ingredients labelling, which would impact the Scotch industry in particular.
- Governments may also review legislation on beverage alcohol e-commerce - for instance, a liberalisation of currently restrictive e-commerce regulations in large markets such as Russia or India could have a significant impact on route-to-market.

How will brands differentiate in an increasingly crowded RTD market?

The trend for convenience and the evolution of the global ready-to-drink (RTD) category

The ready-to-drink (RTD) alcohol category, which includes hard seltzers, flavoured alcohol beverages, and pre-mixed cocktails, is under rapid transformation across leading markets, with volume growth out-pacing that of other beverage alcohol categories globally.

While there are distinct differences across all countries, it's clear that hard seltzers or seltzer-like products are growing in popularity as consumers look for sessionable, lower-ABV options. The portability and single-serve nature of RTDs has proven a key factor of growth, especially during Covid-19. Convenience is a key tenet of go-to-market & channel distribution strategies, especially in countries such as Japan, the US, Mexico and Brazil.

Between 2019 and 2020, consumers in 10 key RTD markets gained close to two thousand new RTD products. Throughout 2021, category evolution will be driven by factors such as innovation in alcohol bases, exploration of new and increasingly local flavours, and premium product offerings. RTD brands that are seeking cross-border development will need to pay close attention to taxation rules for varying alcohol bases, which differ between countries.

Has Covid-19 prompted long-term changes in consumer attitudes towards the moderation trend?

No-and low-alcohol offerings become aspirational

2020 cemented the no- and low-alcohol category as a mainstay in consumers' drinking repertoires, with Covid-19 prompting key changes in consumer attitudes, driven by the at-home occasion and an increased awareness of health and wellness. IWSR research shows that across key no- and low-alcohol markets, relaxing at home represents the category's key drinking occasion.

These consumer attitudes are set to continue into 2021. Where no- and low-alcohol offerings were once almost stigmatised, the category has now become aspirational, with consumers increasingly willing to pay a premium for no- and low-alcohol products.

IWSR data shows that while most markets are expecting to see elements of growth within the no/low segment, key growth markets include the US, Germany and Spain, largely driven by the expansion of no- and low-alcohol beer and wine. Within the no/low spirits category, the US and UK will see some of the most rapid growth.

INDIAN WHISKIES

Binod K. Maitin

History Of Alcoholic Beverages In India

Alcohol consumption in India dates back to the pre-Vedic era, when it was called *som-ras* or *sura.* The pre-Vedic Harappan civilization mentioned the production of toddy from palm trees, and in the Vedic era (1500-700 BCE) alcohol was believed to be liberally imbibed by both gods and humans according to Hindu mythology. *Som-ras,* or *soma,* was the drink of gods, and *sura,* a form of beer, was popular among the general population. Alcohol was produced from flowers, grains, and fruits. It was consumed for its invigorating effects and as an integral part of the Aynrvedic system of medicine. Some of the traditional alcoholic drinks are still popular in modern India. Examples include *toddy,* which is made from palm, and *fenny,* which is made from cashews and coconuts and is popular in tourist spots such as Goa and Kerala. Another local drink known as *mahua* is made from mahua flowers *(Madhuca latifolia)* and comes from the state of Madhya Pradesh in Central India.

A more detailed account of the history of alcohol and drinking habits around the world has been presented by several authors (Bennettet al , 1998; Fernandas and Desai, 2013; Hanson. *1995:* Maitin and Stephen, 2004; SIRC, 1998).

The Indian Alcoholic Beverage Market

After China and Russia, India is the third largest liquor market in the world. Although India has traditionally lacked a domestic drinking culture, liquor has gained in. popularity in the last few decades. The key drivers for this growth are increasing urbanization, favourable demographics, enhanced social acceptance for consumption of alcohol, rising per capita income, exposure to and availability of a wider brand variety, and a shift toward branded spirits by country liquor consumers. Innovative marketing campaigns and the propagation of ideas such as potential health benefits of alcohol have also influenced the increase in consumption. In recent years, the Indian alcoholic drinks market has shown strong growth in terms of both value and volume, as well as healthy signs of premiumisation. The industry is highly complex and subject to local and national taxes, and there are significant regional variations in consumer preferences. Despite this, India is emerging as a key market for the global spirits industry, fuelled by the growth in consumption.

India is one of the largest producers of distilled spirits in the world. The alcoholic beverages in India can be broadly divided into distilled spirits, country spirits, and beer (Figure 4,1). Wine has a relatively low consumption rate of only about 1%. The major share of the distilled spirits segment includes whisky, brandy, rum, gin. and vodka, which are collectively known as Indian Made Foreign Liquor (IMFL). The term IMFL has been explained amply in a recently published monograph (Pernand.es and Desai, 2013). IMFL and country spirits account for the bulk of alcohol consumption. Currently, the total IMFL consumption in India is around 300 million cases. Country liquor is also a mass market product, amounting to about 240 million cases (over 30% of the beverage industry in India). Beer accounts for an additional 250 million cases. Spirits are far more

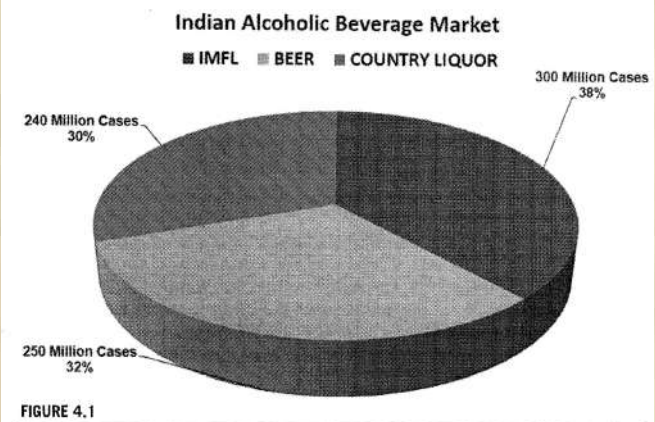


FIGURE 4.1
Indian alcoholic beverage market.

popular than beer and wine and account for about 70% of the market (Fernandes, 2013; Smith, 2013).

Within the IMFL segment (Figure 4,2), whisky predominates and is by far the most popular category, unlike any major market in the Western world. Whisky accounts for over 55% of annual sales, or ~170 million cases. This is followed by brandy (25% of sales, or ~76 million cases), rum (15% of sales, or ~45 million cases), gin (1.5% of sales, or ~4 million cases), and vodka (2.5% of sales, or ~8 million cases)

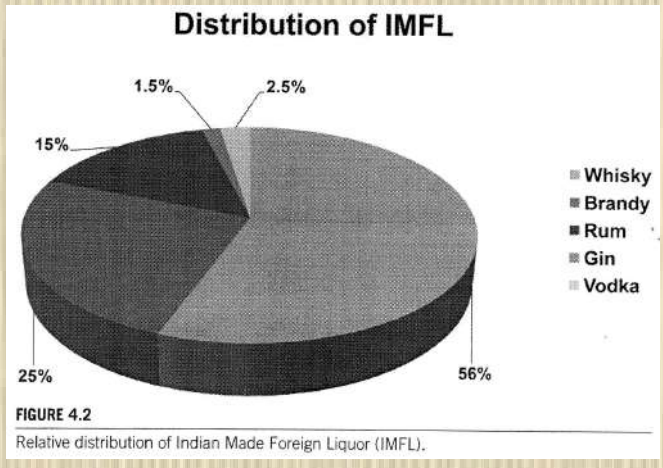


FIGURE 4.2
Relative distribution of Indian Made Foreign Liquor (IMFL).

Indian Whisky

Whisky, the most popular distilled alcoholic beverage in India, was introduced to India in the 19th century during the time of the British Raj. It has gained popularity among affluent Indians, and India has become one of the largest markets for whisky in the world. As in other countries, Indian whiskies also have their traditions. Whisky making in India is somewhat different than in other countries, as Indian whiskies are traditionally blended with neutral alcohol, commonly known as extra neutral alcohol (ENA). ENA is produced from sugarcane molasses due to its abundant availability in the country and has been the most preferred base for alcohol beverages in India for many decades. This process contributes to the distinct identity of Indian whiskies, similar to Scotch or local whiskies in other countries.

Indian whiskies are available in a broad range of price segments to cater to consumers of diverse socioeconomic status. Economy whiskies are produced using only ENA from sugarcane molasses, with flavourings added. At the other end of the spectrum are single-malt whiskies, produced using fermentation processes and pot-still distillation and matured in oak wood casks, similar to the practises of Scottish distilleries. An intermediate segment is comprised of premium blended whiskies containing varying proportions of Indian malt whiskies and Scotch malt whiskies, with neutral alcohol being used as the base and with or without the use of flavourings.

Indian whiskies are broadly classified into premium, prestige, regular, and economy segments, as shown in Figure 4.3. Among these, whiskies from the regular and economy segments contribute over 70% of the total volume. Although growth of-the regular segment has declined, prestige and premium segments have grown continuously.

Raw Materials

References to whisky as the “water of life” do not specify its raw materials. The raw materials, composition, definitions, and laws concerning whiskies in various countries are diverse. They are dependent on the availability of raw materials, convenience of use, the local economy, regulations,

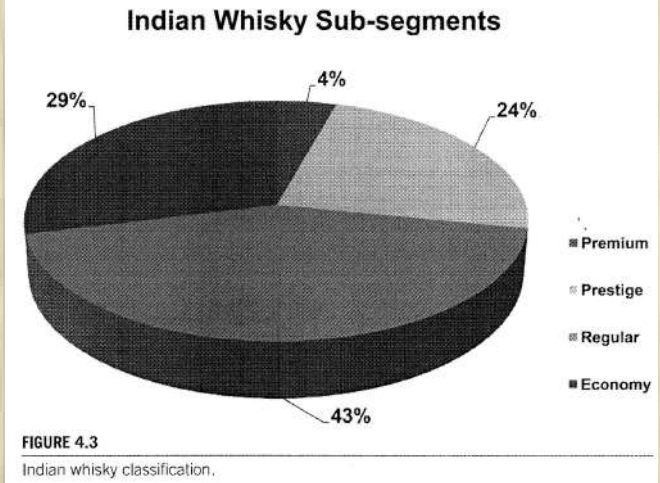


FIGURE 4.3
Indian whisky classification.

and environmental issues. Scottish, American, Canadian, and Irish whisky processes use malt and several other cereal grains, such as rye, barley, corn, and wheat, to produce their whiskies. Although they all use cereal grains, they digress to varying degrees from the concept of using only malt, originally practiced in Scotch whisky production. Raw materials other than barley malt are generally adopted to facilitate the production of more affordable whiskies, compared to the 100% malt whiskies, which tend to be expensive. Similar to Bourbon, Canadian, and Thai whiskies, which use raw materials different from those used for Scotch whiskies, Indian whiskies using various raw materials have acquired their own enthusiasts (Lyons, 2003; Ralph, 2003: Teramoto et ai, 2000). Commonly used raw materials for producing whiskies in different countries are summarised in Table 4.1 (Maicin and Stephen. 2004).

Traditionally, IMFL products, including whiskies, used to be based solely on ENA distilled from fermented molasses. However, many premium Indian whiskies are currently produced from malt and other grains and even include some popular single-malt varieties such as McDowell's, Amrut, and Paul John.

The use of alcohol derived entirely from grain was not considered a critical requirement for Indian whiskies, as there is no perceivable difference between the neutral alcohol produced by column distillation from cane molasses and that from grain, in terms of congener profiles. Both are rectified in order to make them pure and congener free. Indian whiskies from the two substrates cannot be differentiated or-ganoleptically or chemically. Thus, a grain-based whisky does not offer any benefits in terms of consumer preferences for aroma and palate.

In view of food shortages, the scarcity of grain for potable alcohol was the major reason to restrict grain use for whisky in India. The abundant availability of molasses in India (currently, ~11 million tonnes) has consequently been extensively utilised for alcohol production (~2300 million litres). Of this, about 1000 million litres are used as potable alcohol. The remaining 1300 million litres are used for industrial, medical, and other purposes. Even though grains such as barley, wheat, corn/maize, jowar, bajra, and sorghum are produced in large quantities (~250 million tonnes), only a negligible fraction (1.25 million tonnes) is utilised for spirit and beer production and the rest is used as food for the country's large population. The details are summarised in Table 4.2.

Volatility in the price and availability of molasses in recent years, due to the cyclical nature of the sugarcane crop, combined with the compelling needs of allied users has necessitated adoption of grain-based alcohol by liquor companies to meet the growing demand for potable alcohol products. The increasing sufficiency in grain production in India has encouraged the IMFL industry to produce

Table 4.1 Raw materials for whiskies in various countries

Country	Raw materials
Scotland	Barley malt and grain (wheat and maize)
Ireland	Barley malt and grain (barley, wheat, rye, and maize)
United States	Barley malt, rye malt, and grain (barley, wheat, corn, and rye)
Canada	Barley malt and grain (barley, wheat, corn, and rye)
Japan	Barley malt and cereals
Thailand	Barley malt, molasses, and grain (rice)
India	Barley malt, molasses, and grain (maize, rice, bajra, and sorghum)

Source: Adapted from Maitin and Stephen (2004).

Table 4.2 Alcohol production data

Source	Total production (million tonnes)	Used for alcohol production (million tonnes)	Alcohol (million litres)	
			Total production	Potable use
Molasses	10.80	10.26	2310	1060
Food grains	255	1.25[a]	500	500
Total			2810	1560

[a]Excludes 1.6 million tonnes of barley used for barley malt production (25 million litres of malt spirit).

and use grain alcohol in Indian whiskies, solely or interchangeably with molasses alcohol. Most IMFL manufacturers are now adopting grain alcohol for use in whiskies and white spirits, particularly in premium whiskies. Molasses-based alcohol is now mostly restricted to less expensive brands and country liquors, in addition to its use for industrial purposes and mandatory fuel blending. Using grain alcohol has allowed the IMFL industry to launch cereal-derived Indian whiskies for both domestic and export markets. The availability of upgraded technologies has also aided the development of grain alcohol as a future substitute for potable alcohol.

Although grain whiskies, such as Scotch, are distilled at higher alcohol strength, as occurs for ENA in India, they are not neutral and therefore possess a different congener profile, similar to that of molasses-derived rectified spirit, and contain esters, acetaldehydes, methanol, and fusel alcohols.

No significant improvement in terms of depletion of these congeners could be envisaged during the maturation of such spirits. Instead, additional wood-derived tannins and aromatic aldehydes are leached from casks (barrels) into the whisky during maturation. Excessive extraction of tannins from oak in India's tropical climate suppresses the desired aroma and taste profile. Perhaps, for similar reasons, unlike Scotch, American whiskies also use imaged neutral grain in their blended products.

For Indian whiskies, pure ENA derived from sugarcane. with negligible or no congeners (as in vodka), is the preferred base compared to malt and grain whiskies loaded with congeners. Indian consumers do not prefer American and Canadian whiskies, due to the presence of a high level of congeners and a woody character in these whiskies. Likewise, in the domestic market, single-malt whiskies produced in India according to traditional Scottish practices have not been able to acquire adequate consumer acceptance when compared to ENA-based lighter whiskies.

Indian Whisky Production

Neutral alcohol is produced from molasses using column distillation, similar to the processes used worldwide. As discussed earlier, malt whisky is also produced from 100% barley malt using the processes of fermentation, pot-still distillation, and maturation in oak wood casks, similar to those employed by Scottish distilleries. Indian whiskies use molasses or grain ENA as the base. This is blended with Indian and/ or imported Scotch malt in varying proportions depending on the whisky segment. Premium whiskies have the highest malt content and are generally produced without added flavours. Economy whiskies, on the other hand, do not contain malt, and the whisky characteristics are accomplished through the use of minuscule quantities of food-grade flavours. Colour is adjusted using a spirit-soluble caramel. The strength of whisky and other IMFL products is adjusted to 42.8% abv. All the ingredients used and the final products are assessed for sensory and chemical quality.

Flavour Profiling Of Whiskies

The flavour profiles of three types of Indian whiskies (economy, premium and single malt) have

been discussed by Maitin and Stephen (2004). A similar evaluation was conducted recently for the taste and aroma attributes of three whiskies: economy Indian (A), blended Scotch (B), and premium blended Indian (C). The observations were similar to those reported earlier, and the profiles are shown in Figure 4.4.

The blended Scotch and the premium blended Indian whisky both demonstrated a rich aroma and taste profile, with comparably high levels of malty and woody aroma and tastes, robust body, smoothness, pleasant mouth-feel, and lengthy finish. The premium blended Indian whisky also had a substantial peaty aroma. The economy Indian whisky displayed a profile quite different from the other two, with a lean body, as it did not contain any malt and had no malty or woody attributes. Only fruity, sweet, and vanilla attributes derived from added flavours were observed, but the whisky was perceived as being smooth.

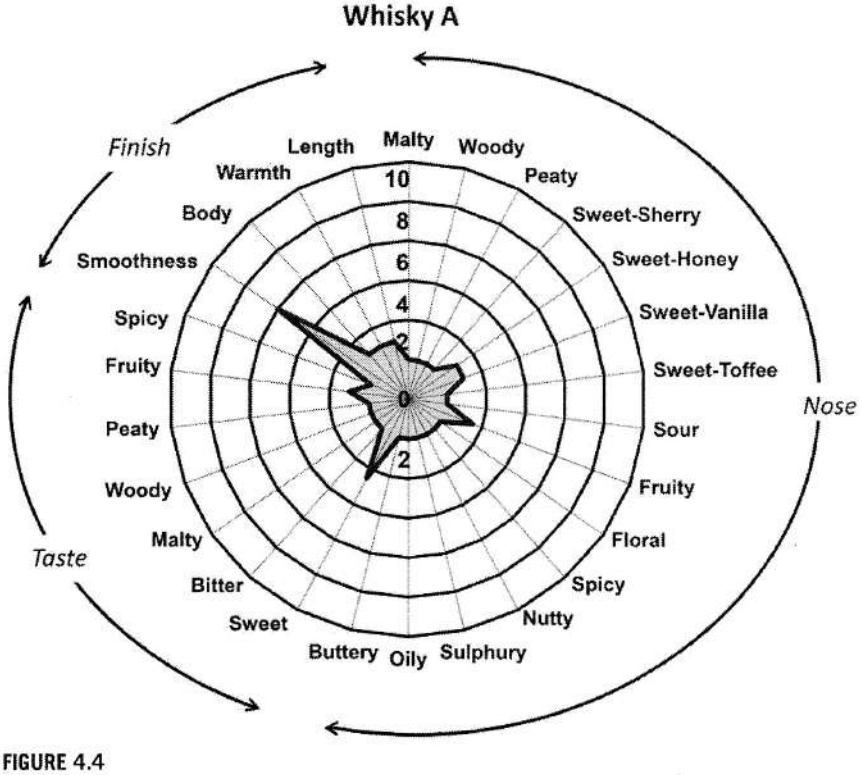


FIGURE 4.4

Comparative flavour profiles of economy and premium Indian whiskies: (A) economy Indian whisky, (B) blended Scotch whisky, and (C) premium blended Indian whisky. Nose, taste, and finish as labelled for Whisky A also apply to Whisky B and Whisky C.

(continued)

Gas Chromatographic Profiling of Whiskies

Gas chromatographic (GC) analysis data for the three types of whiskies discussed earlier (economy Indian whisky, blended Scotch whisky, and premium blended Indian whisky) are illustrated in Figure 4.5. As observed earlier, the economy whisky had negligible levels of congeners and did not contain any malt. The levels of congeners were highest in Scotch and moderate in the premium blended malt whiskies, as a function of their substantial malt content.

Consumer Research: Home Use Test

A home use test (HUT) on super premium and economy whiskies was conducted for the three whiskies described above. Economy Indian whisky, blended Scotch whisky, and premium blended Indian whisky were subjected to sensory evaluation by 62 consumers. The results (not shown) indicated that most consumers were not able to discriminate between the premium and non-premiurn whiskies. This could be attributed to the typical Indian style of drinking, which often inhibits the accurate perception of aroma and taste required for appreciating whisky. Nevertheless, the data suggested that the less expensive whisky was preferred over both the premium blended Indian whisky and the Scotch whisky by most non-Scotch

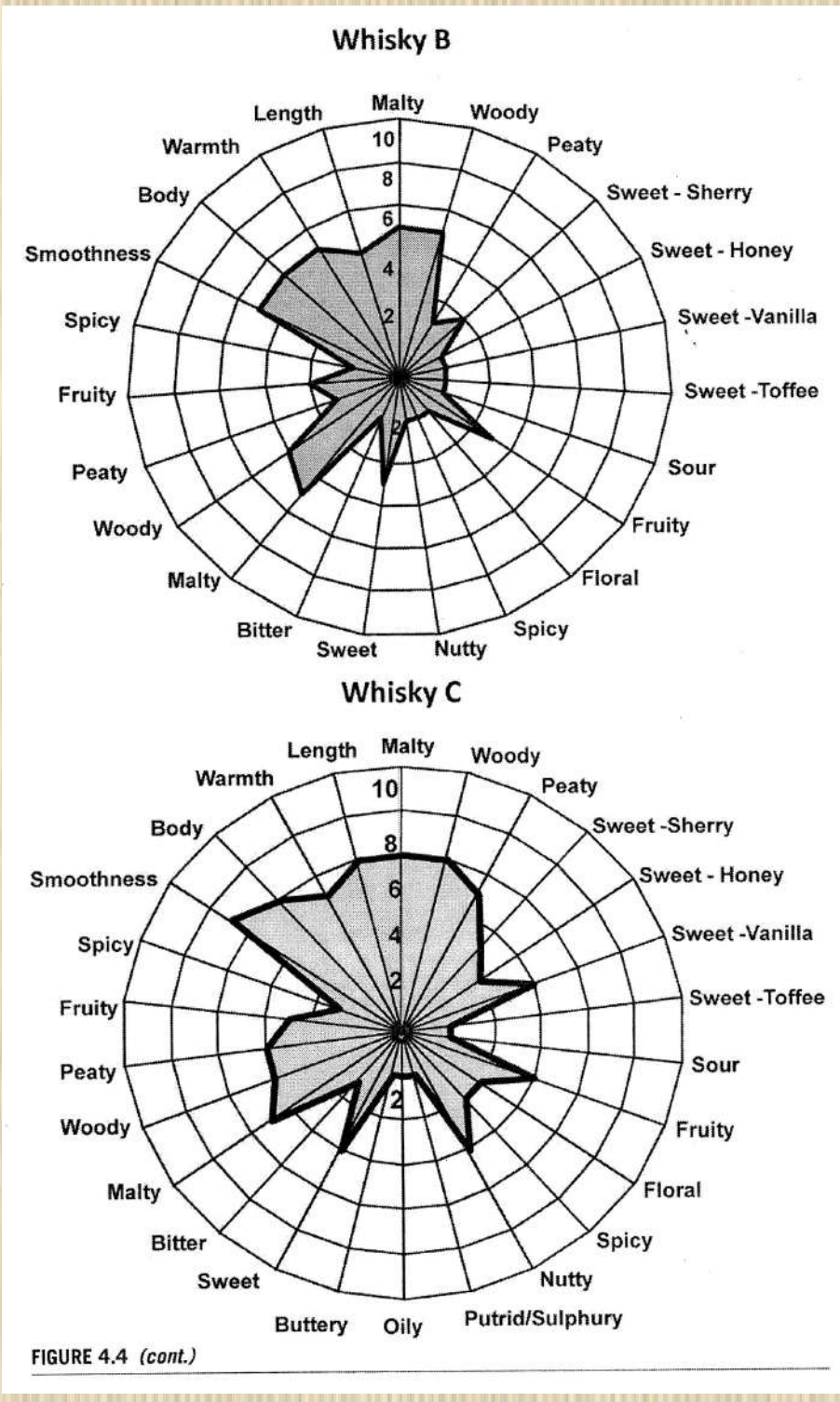


FIGURE 4.4 *(cont.)*

consumers, although they also liked the premium brands. This observation reflects an evolution in consumer taste perception compared to previous data (Maitin and Stephen, 2004), wherein the evaluators disliked the premium whiskies. Younger consumers also liked both types of whiskies, but the preference for the premium whisky was more pronounced. This observation is in line with the increasing trend of premium whiskies in India. Scotch consumers showed mixed preferences for

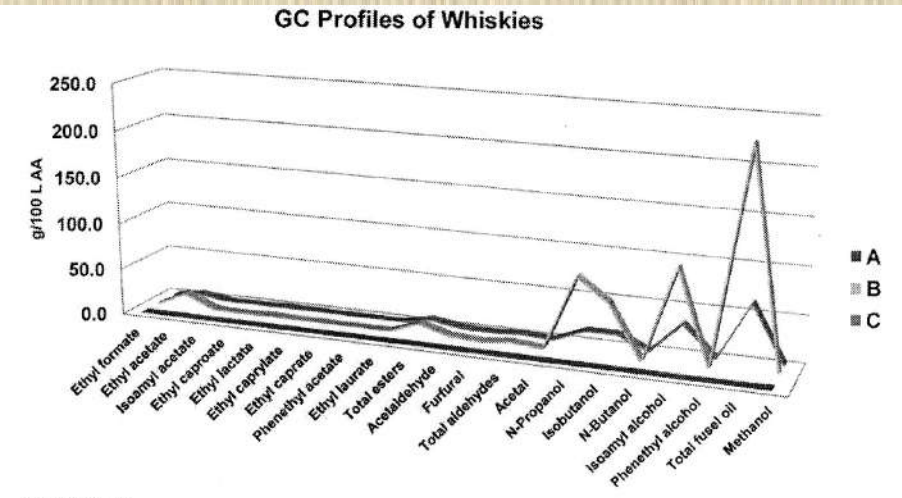


FIGURE 4.5

Chemical profiles of economy and premium Indian whiskies analysed by gas chromatography: (A) economy Indian whisky, (B) blended Scotch whisky, and (C) premium blended Indian whisky.

premium and Scotch whiskies. Interestingly, like the observations reported earlier, several experienced Scotch consumers did not categorically dislike the economy whisky. Hence, the premium attributes of the whiskies, as judged by the level of malt, did not have any impact on consumer preference. The above observations are in line with the considerable consumption of economy Indian whisky in the domestic market.

Benefits of Neutral Alcohol based Whisky

The use of neutral spirit as a base is economical arid offers many advantages. It gives better uniformity to the final product and serves as a common inventory for several products ranging from whiskies to vodka. Its usage facilitates the production of preferred light-bodied whiskies and helps to retain the characteristic aroma and taste of malt whiskies in the premium blended Indian whiskies. Also, it has lower congener levels, leading to lesser chances of a hangover. With negligible amounts of added flavours (~0.002 to 0.005%), desired flavour attributes can be easily achieved. Use of neutral alcohol as a base is less problematic for East Asian consumers, as almost 50% of people from this region are known to be deficient in the ALDH2 isozyme required to detoxify acetaldehyde (Edenberg. 2007; Maitin and Stephen. 2004; Suddendorf, 1989: Swift and Davidson. 1998).

Drinking Patterns in India

Drinking practices vary substantially amongst various countries and different populations. In India, the drinking style varies with socioeconomic class and consumer segment. Most people in India normally drink alcohol in the evenings, before dinner and with spicy snacks that tend to mask the real taste of the drink. Consumers generally mix whisky with a generous quantity of soda, water, or both and drink it with or without ice. This significantly dilutes the actual taste of the whisky, diminishing the sensory qualities of a premium product. The drinking time is often compressed, sometimes less than 30 minutes. Fast drinking or gulping is very common. For new consumers, such as those who may have just turned legal drinking age, the process of drinking and becoming inebriated is more important than actually drinking for enjoyment (Bennett et a.L, 1998; Girish e-t al, 2010: Maitin and. Stephen, 2004).

Worldwide Ranking Of Indian Whiskies

India is the largest whisky market in the world. The Indian whiskies listed in Table 4,3 account for

Table 4.3 Top Eight Indian Whisky Brands

Whisky brand	2012 Sales volume
McDowell's No.1	19.5 million 9-litre cases
Officer's Choice	18.1 million 9-litre cases
Bagpiper	14.1 million 9-litre cases
Royal Stag	14.0 million 9-litre cases
Old Tavern	11.6 million 9-litre cases
Original Choice	10.9 million 9-litre cases
Imperial Blue	8.8 million 9-litre cases
Hayward's	7.1 million 9-litre cases

Sources: Zwiebach, 2013a; Drinks International, 2013.

eight of the top ten whiskies ranked by volume of sales in 2013 (Zwiebach, 2013a; Drinks International, 2013).

Of the top 15 growth brands within the world's top 100 brands of spirits, nine are whiskies. Seven out of the nine are Indian whiskies, with ranks of 3rd, 4th, 7th, 8th, 10th, 13th, and 15th and sales of 60.2 million cases. The other two whiskies are Scotch (ranked 12th) and Japanese (ranked 14th), with sales of 2.6 and 2.8 million cases, respectively. Additionally, out of the 31 top-ranked whiskies, 14 are Indian whiskies (126.6 million cases out of a total of 213.8 million cases) (Zwiebach, 2013b,c).

Among the 176 spirits listed in Drink International's 2013 special publication, *The Millionaires' Club,* are 50 whisky brands; of these, 19 are Scotch blends, 17 are from India, six from the United States, five from Canada, two from Japan, and one from Ireland. The list also includes a single-malt Scotch (Drinks International, 2013).

PRODUCTION OF ETHYL ALCOHOL BY FERMENTATION

Fermentation is one of the oldest methods of producing ethyl alcohol, mainly meant for potable purposes. The raw materials used for fermentation are those containing carbohydrates, in one form or the other. These are as follows :-

1. Sacchariferous materials (those containing sugar) like cane and beet molasses, cane and beet juice, fruits etc.
2. Amylaceous materials (those containing starch) like grains, potatoes, other roots etc.
3. Cellulose, like wood, agricultural residues, waste sulphite liquor from pulp and paper-mills, waste paper etc.

Table No. 4 shows the economics of producing ethyl alcohol from different sacchariferous (sugar containing) raw materials like, molasses, sugar cane, sugar beet, sugar sorghum and amylaceous (starch containing) raw materials like cassava, corn, wheat, rice, potato, Jerusalem artichoke, sweet potato etc., farm yield and alcohol yield from each.

Alcoholic fermentation is a bio-Chemical reaction in which sugars of C_6 type with a chemical formula $C_6H_{12}O_6$ (glucose, fructose, levulose etc.) are converted into ethyl alcohol. Fermentation process is catalysed by enzymes secreted by yeast *(saccharomyces cerevisiae).* In other words, hexoses are converted by the action of yeast into ethyl alcohol. If polymers of hexoses are present in any raw materials, in the first instance, they have to be converted into hexose sugar units and then fermented into ethyl alcohol. This transformation of polyhexoses into hexoses is known as hydrolysis and can be either enzymatic or chemical.

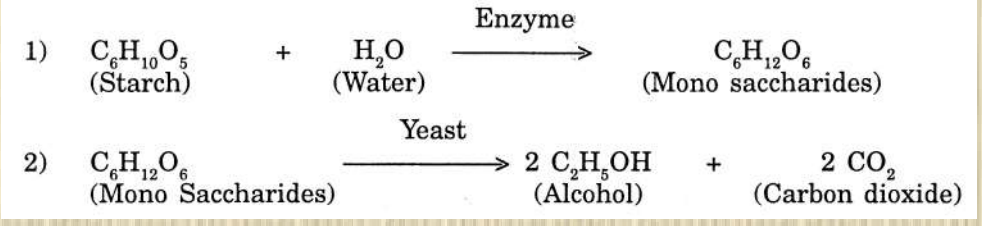
TABLE NO. 4

S.No.	Raw material	tonnes per hectare and per year	sugar or starch content	litres per ton	litres per hectare and per year	days per year of alcohol production	Remarks
1	2	3	4	5	6	7	8
1.	molasses with 50% fermentable sugars from cane or beets	—	50%	300	—	330	—
2.	sugar beet	45	16%	100	4,300	90	
3.	sugar cane	70	12.5%	70	4,900	150/180	energy-sufficient
4.	sugar sorghum	35	14%	80	2,800	–	energy-sufficient
5.	cassava	15	25%	150	2,250	200 to	
		40	25%	150	6,000	300	
6.	corn	5	69%	410	2,050	330	
7.	wheat	4	66%	390	1,560	330	
8.	rice	5	75%	450	2,250	330	
9.	potato	30	20%	120	3,600	330	
10.	Jerusalem artichoke	50	14%	90	4,000	90	
11.	sweet potato	50 (25×2)	25%	150	7,500 (3750×2)	–	two yearly harvest possible

Theoretical equation of transformation of hexose into ethyl alcohol is as follows:

$$\underset{\text{(Hexose)}}{C_6H_{12}O_6} \longrightarrow \underset{\text{(Ethyl alcohol)}}{2C_2H_5OH} + \underset{\text{(Carbon dioxide)}}{2\ CO_2} + \underset{\text{(Heat)}}{28.7\ \text{kcal.}}$$

Therefore, all the raw materials containing carbohydrates in different forms (sugars, starch, cellulose) will have to be converted in the first instance to mono-saccharides (glucose and fructose) before subjecting them to fermentation with the help of yeast. In the case of sacchariferous raw materials like molasses, cane and beet juice, fruits etc., the substrate (material to be fermented) is already in the form of sugars and hence, they do not require any elaborate preparation. In the case of amylaceous raw material like, grains (corn, wheat, milo, sorghum, rice etc.), roots like, potato, sweet potato, cassava (tapioca), etc., the substrate is in the form of starch, which is a poly saccharide, and has to be converted into sugars and then the sugars are fermented with yeast to produce ethyl alcohol. Thus, this is a 2-stage process according to the following reactions:



In recent years, simultaneous saccharification and fermentation process (SSF) has been developed by which, ethyl alcohol can be produced from starch in a single stage.

To produce ethyl alcohol from cellulose is still more difficult, as cellulose is a long chain poly saccharide with a chemical formula $(C_6H_{10}O_5)$ n. Cellulose is available in all plants and is associated with lignin, pentosans, gums, pectins, colouring matter etc. Therefore, in the first instance, an elaborate process is required to break the lignin bond and obtain pure cellulose, before it can be split up into mono-saccharides for fermentation. Cellulose can be converted into sugars by either acid hydrolysis or enzymatically. Acid hydrolysis was adopted by many firms in Europe during the World War II period but, after the war ended, alcohol produced from other raw materials became cheap and hence, these plants were abandoned. At present, Gulf Oil Company, Pittsburg (U.S.A.) is the only plant having a semi-commercial scale plant to produce ethyl alcohol from cellulose by enzymatic hydrolysis of cellulose and fermentation into ethyl alcohol.

A. PROCESS OF PRODUCING ALCOHOL FROM MOLASSES (SACCHARIFEROUS MATERIALS)

Production of ethyl alcohol from molasses, is more relevant to the readers than that produced from other raw materials, like starch and cellulose. Hence, it is proposed to explain it in detail. Of course, production of ethyl alcohol from sugar cane juice or sugar beet juice is also more or less similar, except in the pre-treatment of the juices. In order to understand the process, it is necessary to know the definitions of some of the technical terms used in distilleries and formulae used for calculation of the efficiency data, and hence, they are explained in the following paragraphs

i) Definitions

The definitions of some of the technical terms used in the distilleries are explained below:

a) Molasses

Molasses is the mother liquor left over after crystallization of sugar from concentrated cane or beet juice. It is not commercially possible to extract any more sugar from it and hence, is used as raw material in the distilleries for producing ethyl alcohol from the sugars and

reducing sugars contained in molasses.

b) Total Reducing Sugars
The sum total of sugar ($C_{12}H_{22}O_U$) and reducing sugars like glucose ($C_6H_{12}O_6$) present in molasses is known as total reducing sugars. The total reducing sugars in molasses is obtained by titration with Fehling Solution after hydrolysis and expressed as total invert sugar.

c) Unfermentable Sugars
All reducing sugars in molasses are not fermentable into ethyl alcohol, as some are unfermentable sugars also. These represent the quantity of reducing sugars contained in molasses after it has been completely fermented by yeast under specific conditions, again expressed as invert sugars.

d) Fermentable Sugars
Fermentable sugars are those, which can be converted into ethyl alcohol by fermentation. These can be arrived at by deducting unfermentable sugars from total reducing sugars.

e) Brix
In sugar and allied industries, the term brix is used to indicate the percentage of dissolved solids. It is an indication of the density expressed on Brix Hydrometer Scale. Molasses has a brix of 80° to 85°, which means the solids content of molasses is 80-85% and the balance 15-20% of molasses is water.

f) Polarisation (Pol.)
Polarisation is the quantity of sugar contained in any sugar house product. It is simply termed as “Pol” also.

g) Purity
Purity of any sugar house product, like molasses is the percentage ratio of Pol to brix.

$$\text{Thus, purity} = \frac{\text{Pol}}{\text{Brix}} \times 100$$

h) Alcohol
Alcohol usually means ethyl alcohol with a chemical formula of C_2H_5OH obtained by fermentation of molasses and cane or beet juice with yeast or other methods.

i) Spirit
This term is used to denote the products of distillation, containing alcohol.

j) Wort
This term is used to denote a solution of molasses in water used either for yeast propagation or for fermentation with yeast into alcohol.

k) Pitch or Bub
These terms are used to denote the charge of yeast suspension prepared for inoculation into the wort contained in the main fermentation tanks.

1) Wash
This represents the wort or solution of molasses during and after completion of alcoholic fermentation.

m) Sludge
This is the residue of yeast and other material, which accumulates at the bottom of the fermentation tanks along with such portion of wash as goes with it and is not taken for distillation.

n) Sediment
This represents the residue obtained after pre-treatment or clarification of molasses.

o) Reflux
The condensed vapours returned to the distillation column is known as reflux. Rectification is a distillation process carried in such a way that the vapours rising from a still come in contact with a condensed portion of the vapour previously evolved from the same still. In this process, a transfer of materials and

interchange of heat takes place, thereby securing a greater enrichment of the vapour in the volatile components that could be secured with a single distillation operation using the same amount of heat.

p) Spent Liquors

This is the residual liquid left over after alcohol is distilled out of the fermented wash. This is also known as "distillery effluents" or "spent wash". In other countries, particularly Brazil, this is known as "vinasse".

q) Proof Spirit

This is a unit of alcohol strength, when gun-cotton takes fire at 57°F, wet with alcohol, it is to be of one proof. In the scale, there are 100 proof and above it becomes Over Proof (O.P). 75.4 O.P is equal to 100% alcohol. To know the proof strength of alcohol, 100 is to be added to over proof. Thus, 68 O.P, is 168 proof.

ii) Calculation of Efficiency Data

In a distillery based on molasses, in the first instance molasses is fermented with the help of yeast by which the sugars and reducing sugars contained in molasses are converted into ethyl alcohol and carbon dioxide. The efficiency of this conversion, known as "Fermentation Efficiency" depends on many factors, which will be discussed subsequently.

After fermentation is completed, the fermented wash is distilled for the separation of ethyl alcohol. The recovery of alcohol at this stage also depends on many factors. The efficiency of distillation is known as "Distillation Efficiency".

The formulae for calculating the various efficiencies in a distillery are as follows—

i) Fermentation Recovery = Total wash distilled × Alcohol % wash as 100%

ii) Theoretical yield of Alcohol = Fermentable sugars in wash distilled × 5.3 litres of Absolute Alcohol

iii) Fermentation Efficiency $= \dfrac{\text{Fermentation Recovery} \times 100}{\text{Theoretical yield}}$

iv) Distillation Efficiency $= \dfrac{\text{Total product obtained in Absolute Alcohol}}{\text{Total wash distilled} \times \text{Alcohol \% in wash as 100\%}}$

v) Overall Recovery $= \dfrac{\text{Total product obtained, in Absolute Alcohol}}{\text{Total weight (Tonnes) of molasses distilled}}$

vi) Overall Efficiency $= \dfrac{\text{Total product obtained, in Absolute Alcohol} \times 100}{\text{Theoretical yield, in Absolute Alcohol (Absolute means 100\% Alcohol)}}$

B. Operations in a Distillery

An establishment or any works in which distilling of spirits (alcohol) is carried on is known as a distillery.

The main operations in a distillery are:

i) Fermentation and

ii) Distillation.

Fermentation is a biological process, whereas distillation is a chemical engineering unit operation. Till the year 1985 almost all the distilleries in different countries were adopting batch fermentation process, in which fermentation of molasses is done in each fermenter, one after the other, batchwise. From 1985 onwards, with the development of many

types of continuous fermentation processes in different countries, a number of distilleries, particularly those in India, have adopted continuous fermentation process. The next operation of distillation is a continuous process in all the distilleries. Thus, batch fermentation process is a traditional and age-old process adopted in many distilleries in different countries. Batch fermentation process is explained in the following paragraphs :-

i) Fermentation

In the batch fermentation process, molasses, which has a solids content of about 90% (90° Bx) and total sugars content (sugar and reducing sugars) of about 50% is diluted with water, to give a solution of about 25° brix (solids) and 15% sugars. This solution is known as "wort" in the distilleries. Molasses is not subjected to any pre-treatment or sterilization in the batch fermentation process. The wort is pumped into the fermentation tanks, which are made of mild steel. These tanks may be 10 to 15 in number, depending on the capacity of the distillery.

Yeast, which is usually baker's yeast *(a strain of Saccharomyces Cerevisiae)* is added to the wort contained in the fermentation tanks. In some distilleries, the yeast is developed every day from a test tube slant to about 20,000 litres in four stages of propagation by aerobic fermentation. The yeast thus developed in the wort is known as "pitch" or "bub" in the distilleries. The wort used for the development of yeast is sterilized with steam heating, so that the yeast is not contaminated with any kind of micro organism, which may lead to the production of undesirable products, other than alcohol, during fermentation.

As the fermentation starts and the yeast multiply, a part of the fermentable sugars content in the wort is consumed by the yeast for its own survival and multiplication. Then, anaerobic fermentation takes place, when the enzyme "invertase" contained in the yeast converts the di-saccharides like sugar in the molasses into mono-saccharides like glucose and fructose. Subsequently, the enzymes "zymase" contained in the yeast converts the mono-saccharides into ethyl alcohol and carbon dioxide. (In the recent years, there is a rethinking on this theory). As the carbon dioxide tries to escape from the fermenting wort, it creates bubbles and foam. Sometimes, the foam comes up to the brim of the fermentation tanks and as such, in order to break the foam, anti-foaming agent, like turkey red oil is sprayed on the surface of the foam, due to which the foam settles down. As the fermentation progresses, more and more sugars are converted to ethyl alcohol and carbon dioxide, which is seen visually by the bubbles of carbon dioxide coming up. The sugars content of the wort can also be analysed in the laboratory to ensure that all the sugars are completely converted into ethyl alcohol.

As yeast requires nutrients for its survival, nutrients like ammonium sulphate, urea, phosphatic salts, etc., are added to the wort in small quantities. In some distilleries, in order to arrest the growth of undesirable micro organisms, antibiotics like benzyl pencillin is added to the wort in small doses.

Fermentation requires an optimum pH of 4.5 to 5.0. Hence, usually sulphuric acid is added to attain this pH.

Anaerobic fermentation of feed-stock in the distillery is an exothermic process. Therefore, the temperature of the wort in the fermentation tanks goes up. The yeast cannot thrive at high temperature and its activity is reduced as the temperature goes up. The ideal temperature during fermentation is between 30°C to 33°C and beyond 37°C, the yeast becomes inactive, thereby the yield of alcohol gets reduced. Therefore, cooling of the fermenting wort is very important to maintain an optimum temperature of 30°C to 33°C, for efficient fermentation. This is usually achieved by spraying water on the outside surface of the mild steel

fermentation tanks through a perforated water pipe.

After the fermentation is completed in about 36 to 48 hours, which is indicated by chemical analysis, the fermented wort is now known as "Wash" containing about 6% to 8% alcohol in the wash. Yeast is also sensitive to high alcohol content in the wash. The normal strains of yeast cannot tolerate an alcohol content of above 10% in the wash and the activity of yeast slows down as the alcohol content goes up.

The fermentation efficiency, which is the ratio of actual production of ethyl alcohol in the wash to the theoretical yield of alcohol calculated on the basis of the total fermentable sugar is usually 80% to 85% in the batch fermentation process.

Carbon dioxide escaping to the atmosphere has a tendency to carry with it, tiny particles of alcohol, particularly when the fermentation is taking place briskly. This is a source of alcohol loss. Therefore, in some distilleries, the fermentation tanks are covered with mild steel hoods to collect the escaping carbon dioxide gas and scrub it with water and use this water for diluting the molasses and thereby recovering the alcohol escaping with the carbon dioxide. Since a majority of distilleries have open fermentation tanks, the carbon dioxide is not collected but, allowed to escape to the atmosphere.

ii) Distillation

The wash in the fermentation tanks is pumped to the distillation column in order to separate alcohol from water and other impurities contained in the wash. In the earlier years, distillation column, as well as the rectification column were made of copper. Nowadays, stainless steel is extensively used for this purpose although deoxydized copper is ideal for obtaining high quality of alcohol without any smell of sulphur compounds. Copper reacts with sulphur compounds and eliminates them from alcohol. In the distillation column, a cylindrical shell is divided into many sections by means of plates. These plates are perforated to allow the passage of vapour and liquid. The plates may also be provided with either tunnel caps or bubble caps for the passage of liquid, as well as vapour in counter current direction. The source of heat for evaporating ethyl alcohol from the wash in the distillation column is steam admitted through a sparger located at the bottom of the still. The down pipes are the return lines for flow of liquid from plate of plate. The wash or beer is fed to the top plate of the column and after forming a shallow layer of liquid on each plate, it over-flows through the down pipe to the next plate below. After descending from plate to plate, the liquid, which is completely deprived of its alcohol content is discharged as "spent wash" from the bottom of the still. This is also known as distillery effluent or vinasse. The vapours of alcohol generated on each plate beginning from the bottom-most plate, rise from plate to plate through the perforations in the plates or the bubble or tunnel caps and condense in the liquid layer on each plate, thereby releasing the heat and vapourising the alcohol from the liquid layer. This process takes place on each plate in the distillation column. Since alcohol has a low boiling point (78.3°C) as compared to water (100°C), it is evaporated from each plate more easily than water and thus, the alcohol content of the rising vapours increases from plate to plate, as it reaches the top most plate in the column.

In the modern distilleries, there is a wash column or stripping column with about 22 plates fitted with tunnel caps. Usually bubble caps achieve better vapour—liquid contact and better approach to equilibrium is possible.

The next column is known as the "rectification column" with about 48 plates fitted with bubble caps. The alcohol vapours rising to the top of the still are condensed in a suitable condenser.

By distillation alone, alcohol stronger than 95.5% by weight or 94.68% by volume cannot be produced.

It is difficult to separate certain portion of the water from alcohol even by using most efficient stills. The reason is that a mixture of 95.5% alcohol and 4.5% water by weight forms an "azeotropic mixture", which behaves like a pure liquid of constant boiling point and is more volatile than pure alcohol. Thus, 94.68% alcohol by volume is known as "rectified spirit".

iii) Continuous Rectification and Reflux Ratio

In the distillation process, the constituents of the liquid mixtures are separated by partial vapourisation of the more volatile constituents and collected separately by condensation of the vapour and another constituent, which is less volatile, is left over as the residue.

In the rectification process, the distillation is carried out in such a way that the vapour rising from a still comes into contact with the condensed portion of the vapour, previously evolved from the same still. By this, a transfer of materials and interchange of heat results from this contact, thereby securing a greater enrichment of the vapour in the more volatile components than could be secured with a single distillation, using the same amount of heat. When the condensed vapours are returned to the still to accomplish the above objective, this is known as "reflux". The term "reflux ratio" in a distillation operation means, the quantity of reflux per unit quantity of distillate removed from the process, as a product. The reflux interacts with the vapour rising from the still and scrubs the higher boiling constituents from the vapour steam, at the same time being stripped of a portion of its content of low boiling materials. In a rectification column provided with bubble caps on the plates, the reflux passes down the tower from tray to tray through suitable down flow pipes. The vapours from lower plates are made to bubble through the layer of liquid maintained on each plate. The heat to vapourise a portion of the feed and reflux is supplied by means of steam condensing in a closed coil, in the base of the column. A general diagram of an alcohol distillery using batch fermentation process can be seen in Figure No. 1:

iv) Alcohol Recovery

The main reactions during fermentation are as follows:-

$$\underset{\text{(Sugar)}}{C_{12}H_{22}O_{11}} + H_2O \longrightarrow \underset{\text{(Invert Sugar)}}{2C_6H_{12}O_6}$$

In the first step, when the yeast is added to a solution of molasses, which contains sugar, as well as invert sugar (glucose), the entire sugar (a di-Saccharide) is converted into invert sugar (Mono-Saccharides), according to the following equation. This is by the action of enzyme (invertase) content in the yeast :

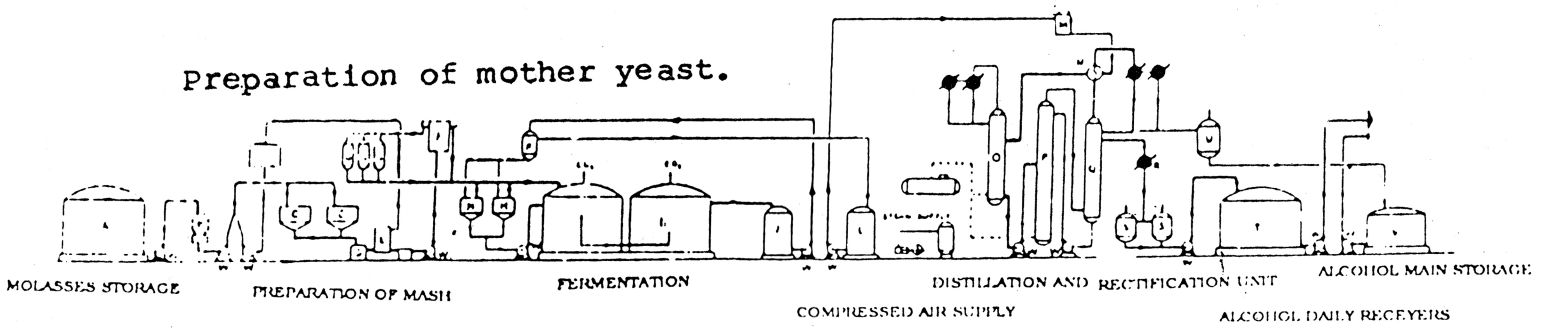
It may be seen from the above reaction that according to the molecular weights of sugar and invert sugar, 100 parts of sugar yields 105.26 parts of invert sugar, when sugar is inverted.

In the next reaction, the enzymes "zymase" content in the yeast converts the invert sugar into ethyl alcohol and carbon dioxide according to the following equation :

$$\underset{\text{(Invert Sugar)}}{C_6H_{12}O_6} \longrightarrow \underset{\text{(Ethyl alcohol)}}{2C_2H_5OH} + \underset{\text{(Carbon dioxide)}}{2\ CO_2}$$

Theoretically, one gram of invert sugar yields 0.6448 ml. of alcohol. In other words, one tonne of invert sugar yields 644.8 litres of ethyl alcohol, (absolute alcohol).

If molasses contain 45% fermentable sugars, each tonne of molasses would contain 450 kg. of fermentable sugars. Thus, the theoretical recovery of alcohol should be:



A	MOLASSES TANK
B	MOLASSES WEIGHING SCALE
C	MOLASSES COOKERS
D	MOLASSES CLARIFIER
E	MOLASSES COOLER
F	FINAL DILUTOR
G	PURE YEAST CULTURE VESSELS
H	YEAST TUBS
I	FERMENTERS
J	WASH RECEIVER
K	YEAST SEPERATOR
L	WASH CHARGER
M	WASH OVERHEAD TANK
N	WASH PREHEATER
O	WASH PURIFYING COLUMN
P	BOILING COLUMN
Q	RECTIFYING COLUMN
R	SPIRIT COOLER
S	DAILY RECEIVERS
T	CLEAN SPIRIT TANKS
U	SIDE STREAMS RECEIVER
V	SIDE STREAMS STORAGE
W	PUMP

Figure No. 1: Flow Sheet of Molasses Fermentation and Distillation.

$$\frac{450 \times 644.8}{1000} = 290.16 \text{ litres of alcohol}$$

But, if the average fermentation efficiency in a distillery is 85% and the distillation efficiency is 98.5%, then the actual recovery of alcohol on a plant scale is :

$$290.16 \times \frac{85}{100} \times \frac{98.5}{100} = 243 \text{ litres}$$

But, this is in the form of Absolute Alcohol of 100%. Therefore, if the alcohol recovery is to be calculated in terms of rectified spirit of 94.68% by volume, the yield of alcohol should be :

$$243 \times \frac{100}{94.68} = 256.6 \text{ litres}$$

v) Maintaining Quality of Alcohol

When the ethyl alcohol is used for potable purposes, it is very important to ensure that it is free from all other types of distillates like aldehydes, ketones etc., which are injurious to human health.

As fermentation is a biological process brought about by living organisms, like yeast, other chemicals also may be produced due to the presence of many micro organisms in the molasses. However, all the undesirable products produced during fermentation have different boiling points. Some of the products that are likely to be formed during the fermentation process and their boiling points are as shown in Table No. 5:

TABLE NO. 5

Product		*Boiling Point*
Ethyl Alcohol	—	78°C
Acetaldehyde	—	21°C
Acetic Ether	—	77°C
Iso-Propyl Alcohol	—	83°C
Normal Propyl Alcohol	—	97°C
Iso-Butyl Alcohol	—	108°C
Acetic Acid	—	118°C
Furfural	—	162°C

Therefore, in the distillation column, the first distillate, known as “foreshots”, with low boiling point are collected separately as “heads product”, which are impure spirits. The other undesirable products have a high boiling point than ethyl alcohol. Hence, they distill-over after most of the ethyl alcohol has been collected and this fraction is known as “last runs” or “tailings”. This is done by collecting the condensates of the last condenser in a separate receiver and should not be sent for reflux. Thus, all precautions are taken to obtain high quality of ethyl alcohol.

vi) Fusel Oil Separation

By the action of yeast on invert sugar, though ethyl alcohol is produced as the main product, a mixture of small quantities of high boiling point alcohols are also produced. This mixture of high boiling point alcohols is known as “fusel oil”. The production of fusel oil in any distillery is about 0.1 to 0.2% of the production of ethyl alcohol.

The different types of alcohols in the fusel oil form a constant boiling mixture (azeotropic mixture) with water. The boiling points of the different types of alcohol and their azeotropic mixtures with water are given in Table No. 6:

It may be seen from the above Table that the

TABLE NO. 6

Type of alcohol (1)	Boiling Point at 760 mm Pressure: Pure alcohol as in col. 1(°C) (2)	Boiling Point at 760 mm Pressure: Azeotropic Mixture (°C) (3)
Ethyl Alcohol	78.30	78.15
Iso-Propyl Alcohol	82.44	80.37
n-Propyl Alcohol	87.20	87.72
Iso-Butyl Alcohol	108.06	89.92
n-Butyl Alcohol	117.50	92.25
Iso-amyl Alcohol	132.05	95.15

boiling points of these azeotropes are very close to each other but, fairly higher than the azeotrope of ethyl alcohol with water. This point is taken advantage of to separate fusel oil from ethyl alcohol. Fusel oil tends to collect in the rectification column on the plate, where ^lcohol is 40 to 45% by volume and where the temperature is about 85°C. Both above and below this point, the ratio of fusel oil to ethyl alcohol is lower, and the alcohol, apart from its water content, is purer. In a strongly alcoholic solution, fusel oil is less volatile than ethyl alcohol, while in a more aqueous solution, ethyl alcohol is less volatile of the two. Fusel oil is continuously drawn off the still from the plate, where it accumulates.

Fusel oil is used in the manufacture of explosives and artificial fruit essences. It is also used in the manufacture of paints and lacquers.

vii) Absolute Alcohol Production

Alcohol forms a binary azeotropic mixture (2-constituents) with water (95.5% alcohol and 4.5% water by weight) and this mixture behaves like a pure liquid with a constant boiling point and distills out with the above composition. This azeotropic mixture of alcohol and water is more volatile than pure alcohol.

When a mixture of equal weights of benzene and 95% alcohol is distilled, a tertiary azeotropic mixture (3 constituents) containing alcohol, benzene and water is formed.

This mixture is more volatile and also rich in water than alcohol water mixture. It is, therefore, possible to remove all water from 95% alcohol by adding to it a suitable quantity of benzene and carrying out fractional distillation. During the distillation, there is a tendency towards formation of 3 fractions (all the water, benzene and some alcohol are in the first two fractions and the third fraction containing anhydrous alcohol o absolute alcohol).

The absolute alcohol manufacturing plant consists of (a) Dehydration column; (b) Benzene column; (c) Rectification column. Benzene is known as an entraining agent. A mixture of benzene and petrol in the proportion of 2:1 is a better entraining agent than pure benzene.

Generally, in many countries, only a few distilleries produce absolute alcohol (anhydrous alcohol) for special purposes like, use in pharmaceuticals, research laboratories etc. In Brazil, this is known as anhydrous alcohol and is being used since the year 1975 for mixing with gasoline (petrol) for automobile fuel. Hence, a large quantity of anhydrous alcohol is produced in Brazil.

C. Factors Affecting Technical Efficiencies in Distilleries

The technical efficiencies, which are of importance for judging the efficiency of a distillery are as foliows:-

i) Fermentation efficiency

ii) Distillation efficiency
iii) Steam consumption

The above 3 points are explained in the following paras, with emphasis on energy usage and scope for energy conservation.

i) Fermentation Efficiency

As explained earlier, this refers to the ratio of actual yield of alcohol to the theoretical yield. During fermentation, energy in the form of steam is not at all required, as fermentation is carried out at a temperature of 30 to 33°C, hence, cooling is necessary. Whenever diluted molasses is sterlised for the propagation of yeast cells, a small quantity of steam is used.

Energy in the form of electrical power is used for pumping molasses, dilution of molasses, recirculating the fermenting wash through heat exchangers for cooling, pumping of fermented wash to the distillation column etc. These operations require centrifugal pumps driven by low HP motors. As explained earlier in Chapter No. 15 “Efficient utilization of Electric Power”, by selecting correct size and type of electric motor having a high power factor, it is possible to reduce even this small quantity of electric power used for driving these motors.

ii) Distillation Efficiency

This term refers to the ratio of actual quantity of alcohol (as absolute alcohol) recovered to the alcohol contained in the wash distilled. Almost the entire energy, in the form of steam used in a distillery is for distillation alone. Hence, any measures to reduce energy (steam) consumption, should be concentrated on distillation alone.

In the earlier pages, the mechanism of distillation using steam to vapourise alcohol, which has a low boiling point of 78.3°C has been explained. Steam consumption in a distillery usually varies from 3.2 to 3.5 kgs per litre of rectified spirit of 95.5% alcohol by weight. Thus, a distillery with a daily production capacity of 30,000 litres of rectified spirit, consuming on the average 3.0 kgs of steam per litre, requires 30,000 x 3 = 90,000 kgs of steam per day or 4 tonnes of steam per hour. Even though, this is a small quantity, as compared to the steam requirement of a sugar factory, still the incidence of fuel cost for raising this steam forms about 40% of the cost of production of alcohol. The requirement of steam by larger distilleries is more. Added to this, if rectified spirit has to be redistilled for producing extra neutral alcohol (ENA) for potable purposes or redistillation is necessary to produce absolute alcohol (anhydrous alcohol), the requirement of steam is more. Hence, there is a need for all distilleries to explore ways and means of efficient generation and utilisation of steam.

Consumer Price Index

We give below the Series of All India Average Consumer Price Index Number for Industrial Workers (General) on the base year 1960=100 and 1982 = 100 and 2001 = 100 from **January 2020 to April 2021.**

	2020			2021		
Month	Base 1960	Base 1982	Base 2001	Base 1960	Base 1982	Base 2001
January	7533	1528	330	7761	1574	340
February	7487	1519	328	7806	1583	342
March	7441	1509	326	7852	1593	344
April	7510	1523	329	7898	1602	346
May	7533	1528	330			
June	7578	1537	332			
July	7670	1556	336			
August	7715	1564	338			
September	7761	1574	340			
October	7852	1593	344			
November	7874	1957	345			
December	7806	1583	342			

UP TO FEBRUARY, 2021
Unit: Lac Litres

PRODUCTION OF ALCOHOL

Name of State	S.No.	Name of distillery	Opening Balance of Alcohol	Production in the month		Total Issues during the month	Stock at the end of the month	Production from Jan. of the year	Total Strength of workers
				(B.L.)	(A.L)				
AP	1	Andhra Sugars Limited	5.31	7.07	6.73	8.80	3.24	13.99	-
			0.04	0.19	0.18	0.00	0.23	0.37	
Gujarat	2	Shree Kamrej Vibhag Sahakari Khand Udyog Mandli Limited	**Figure not Received**						
	3	Shree Sayan Vibhag Sahakari Khand Udyog Mandli Limited	4.75	7.89	7.47	7.44	5.20	17.91	23
Maharashtra	4	Rajarambapu Patil SSK Limited	11.89	21.25	0.00	24.70	8.44	37.50	83
	5	Shree Satpuda Tapi Parisar SSK Limited **(Purushottamnagar) ('C' Heavy)**	148.80	1485.55	0.00	1425.75	195.87	175.00	72
		Shree Satpuda Tapi Parisar SSK Limited **(Purushottamnagar) ('B' Heavy)**	0.00	0.00	----	0.00	----	0.00	72
	6	Shree Siddheshwar Shakari Sakhar Karkhana Limited **(January-2021)**	6.91	12.85	0.00	2.08	17.64	12.85	28
	7	Shree Siddheshwar Shakari Sakhar Karkhana Limited **(February-2021)**	17.64	13.17	0.00	8.68	22.06	26.02	28
	8	Sahakar maharshi Bhausaheb Thorat Sahakari Sakhar Karkhana Ltd **(January-2021)**	24.54	15.10	0.00	15.41	24.23	110.63	33
	9	Sahakar maharshi Bhausaheb Thorat Sahakari Sakhar Karkhana Ltd **(February-2021)**	24.23	13.99	0.00	11.38	26.84	124.62	33
	10	Karmaveer Shankarrao Kale SSK Limited	**Figure not received**						
	11	Sahakar Maharshi Shankarrao Kolhe SSK Limited **(SUGARCANE JUICE)**	8.76	14.02	13.38	16.00	6.71	30.74	70
	12	Sahakar Maharshi Shankarrao Kolhe SSK Limited **(MOLASSES)**	1.48	15.46	14.82	14.70	2.18	22.23	70
U.P.	13	Daurala Sugar Works **('C' Heavy)**	2.50	11.17	10.53	1.51	11.98	11.17	85
		Daurala Sugar Works **('B' Heavy)**	18.51	10.91	10.26	20.29	7.89	38.92	
	14	Avadh Sugar & Energy Limited **(Divison Seohara) Upeper Ganges Sugars Ltd**	16.50	32.77	32.74	30.48	19.25	66.86	119
	15	Shamli Distillery & Chemicals Works	**Figure not received**						
	16	Avadh Sugar & Energy Limited **(Divison Hargaon) The Oudh Sugar Mills Ltd**	25.9	32.08	32.05	26.96	31.08	69.02	72

UP TO FEBRUARY, 2021

ALL INDIA DISTILLERS' ASSOCIATION; NEW DELHI

EFFICIENCY DATA

Name of State	S.No.	Location of distillery	Actual distillation Hours	Molasses Consumed (MT)	Molasses Distilled (MT)	Fermentable sugar consumed (MT)	Ratio of Column 6 to 5 with 5 as 100 (%)	Possible recovery HL/MT	Actual recovery HL/MT	Fermentation efficiency %	Distillation efficiency %	Over all efficiency %	Alcohol % in wash
1		2	3	4	5	6	7	8	9	10	11	12	13
AP	1	Andhra Sugars Limited	667	2781	2787.10	1266.45	45.4	2.9	2.48	85.80	98.8	84.8	8.1
Gujarat	2	Shree Kamrej Vibhag Sahakari Khand Udyog Mandli Limited	27	3034	3034	42.6	1292.5	274.3	263.73	89.40	98.4	88.0	7.8
	3	Shree Sayan Vibhag Sahakari Khand Udyog Mandli Limited	608	2903	2898	1244.42	43.0	276.9	272.80	93.27	99.0	92.3	7.7
Maharashtra	4	Shree Satpuda Tapi Parisar SSK Limited **(Purushottamnagar) ('C' Heavy)**	648	6060	6060	2219.8	36.60	1680.8	1667.3	87.20	98.40	85.2	8.00
		Shree Satpuda Tapi Parisar SSK Limited **(Purushottamnagar) ('B' Heavy)**	**Figure not Received**										
	5	Rajarambapu Patil SSK Limited	654	6144	6144	3563.5	58.0	373.5	345.9	90.77	98.50	89.1	12.61
	6	Sahakar maharshi Bhausaheb Thorat Sahakari Sakhar Karkhana Ltd **(January-2021)**	698	5457	0.0	2826.72	51.80	3.34	2.8	84.2	99.0	83.0	10.3
	7	Sahakar maharshi Bhausaheb Thorat Sahakari Sakhar Karkhana Ltd **(February-2021)**	616	5118	0.0	2599.94	50.80	3.27	2.7	84.8	98.6	83.6	10.0
	8	Karmaveer Shankarrao Kale SSK Limited	**Figure not Received**										
	9	Shree Siddheshwar Shakari Sakhar Karkhana Limited **(January-2021)**	631	5183.24	5139.49	2287.07	44.50	2.86	2.50	86.3	98.50	85.0	7.6
	10	Shree Siddheshwar Shakari Sakhar Karkhana Limited **(February-2021)**	672	5208.36	5306.98	2235	44.00	2.83	2.48	85.1	98.27	83.6	6.9
	11	Sahakar Maharshi Shankarrao Kolhe SSK Limited **(SUGARCANE JUICE)**	584.30	19141	18694.13	0.0	0.00	0.78	0.72	92.6	98.5	91.2	7.6
	12	Sahakar Maharshi Shankarrao Kolhe SSK Limited **(MOLASSES)**	656.30	5850	5844.92	2630.16	3.58	2.90	2.53	9025.0	98.8	87.4	8.6
U.P.	13	Daurala Sugar Works **('C' Heavy)**	718	5236	4614	1862	40.35	2.59	2.28	90.07	98.52	87.84	9.56
		Daurala Sugar Works **('B' Heavy)**		2690	3323	1781	53.60	3.45	3.1	91.7	98.5	89.4	11.9
	14	Avadh Sugar & Energy Limited **(Divison Seohara) Upeper Ganges Sugars Ltd**	650	106.67	105.19	56.37	53.6	3.5	3.11	91.39	98.5	90.0	11.5
	15	Shamli Distillery & Chemicals Works	659	81690	338240	31254.45	--	--	21.5	89.0	98.6	87.1	8.8
	16	Avadh Sugar & Energy Limited **(Divison Hargaon) The Oudh Sugar Mills Ltd**	665	10528	10470	5529.20	52.8	3.4	3.06	91.5	98.4	90.0	13.1

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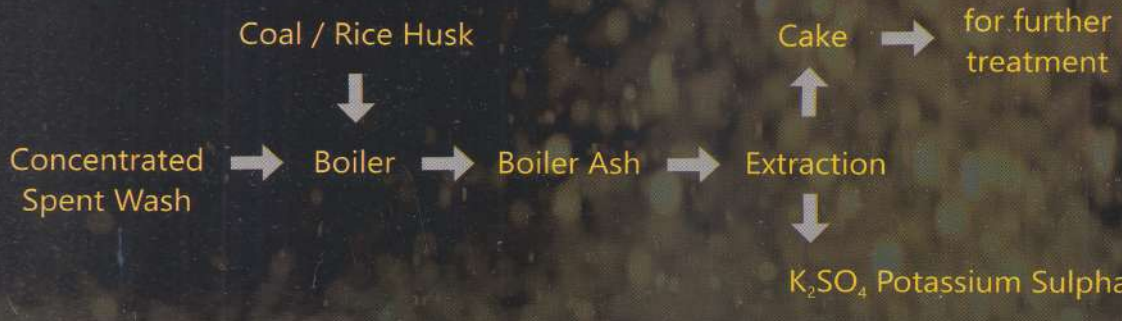

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