

F. No. 4/1/2018-(BP& E)
Government of India
Ministry of Consumer Affairs, Food, and Public Distribution
(Department of Food and Public Distribution)
Directorate of Sugar & Vegetable Oils

Krishi Bhawan, New Delhi
Dated: 18.09.2018

OFFICE MEMORANDUM

Subject:- Mechanism for measurement of B-Heavy molasses used by sugar mills for production of ethanol as well as quantity of ethanol produced from the B-Hy molasses by the distilleries attached with sugar mills: Guidelines regarding

The undersigned is directed to say that the Government of India has announced the National Policy on Bio-Fuels, 2018 where-under blending target of 20% for ethanol with Petrol has to be achieved by 2030 and to facilitate the same production of ethanol from intermediate molasses i.e. B-Hy molasses and directly from sugarcane juice has also been allowed. Accordingly, this Department has amended the Sugarcane Control (Order), 1966 permitting production of ethanol from B-Hy molasses and cane juice. In order to suggest a methodology to assess the quantity of B-Hy molasses utilized by sugar mills for production of ethanol as well as to evolve a criteria/mechanism to differentiate ethanol produced from B-Hy molasses/ sugarcane juice and C-Hy molasses route, a Committee was constituted comprising of the representatives from Excise and Sugar/Sugarcane Departments of Uttar Pradesh and Maharashtra, Ministry of P&NG, OMCs, ISMA and NFCSF and Director (NSI): Kanpur. The committee has since submitted its recommendations inter-alia suggesting the mechanism to be put in place by the sugar mills which divert B-Hy molasses for production of ethanol.

2. On the basis of the recommendations of the Committee, this Department has formulated the Guidelines for strict adherence by the concerned sugar mills/distilleries. Under these Guidelines, the concerned State Excise Authorities have also been ascribed role to certify separately the quantity of B-Hy and C-Hy diverted by the mills for production of ethanol as well as the ethanol produced from either quality of molasses by providing unique serial number for each container for proper Identification.
3. A copy of the said Guidelines is attached herewith for compliance by the concerned sugar mills /distilleries as also for further necessary action by others.
4. These guidelines may be amended, if required, by DFPD to ensure proper accounting and payment for production of ethanol by diversion of B-Hy molasses.

(G.S. Sahu)
Director (S&VO)

Enclosure: as above

To,

1. All sugar mills with attached distilleries
2. Principal Secretaries of Excise Departments of concerned States
3. Principal Secretaries in charge of Sugar of concerned States
4. Cane Commissioners of concerned States
5. Ministry of P&NG

Guidelines to be adopted by the sugar mills and the concerned Distilleries for diversion of B-Hy molasses for production of ethanol (Ref: DFPD OM No. 4/1/2018(BP&E) dated 18th September,2018)

1. The C-Hy Molasses and B-Hy Molasses shall be collected in separate receiving tanks. The colour of the C-Hy molasses tank shall be darker brown & that of B-Hy molasses shall be lighter brown. Similar colour coding shall be provided for their respective pipe lines in the sugar factory, wherever used.
2. Separate pumps without interconnecting pipe lines shall be used for transporting both types of molasses to the storage tanks either in sugar factory or in the distillery. No underground pipelines shall be used for the purpose.
3. In case of diversion of molasses for use in the distilleries associated with the sugar mills, separate storage facilities shall be provided for C-Hy& B-Hy molasses and the sugar mills would ensure that no intermixing of the two different qualities of molasses takes place at any point.
4. Calibrated mass flow meters with check weighment facility e.g. Maxwell Boulogne type weighing scales or load cell based weighing system etc. shall be provided to ascertain the weight of the respective molasses sent out of the process house of the sugar factory to the storage tanks. Mass flow meters would need to be calibrated on quarterly basis or earlier as per requirement. To avoid interruption in continuous production process, a stand-by calibrated mass flow meter shall also be kept ready in stock for replacement.
5. To measure and record the consumption of the two types of molasses for ethanol production, separate system for liquidation shall be provided in the respective storage tanks having separate pumps with mass flow meters to ascertain use of each type of molasses in the attached distillery.
6. Proper recording of production, consumption and stocks of each type of molasses shall be made in log books.
7. The attached distillery i.e. ethanol unit shall be operated with one type of molasses at a time i.e. either C-Hy or B-Hy molasses with separate storage facilities for ethanol produced from two different routes to have correct estimation of the ethanol yield from either type of molasses.
8. Important parameters with respect to quality of C-Hy or B-Hy molasses sent from the processing house viz. Brix, Purity, TRS (Total sugar) content shall be recorded on day to day basis. Such analysis shall also be carried out and recorded at the time of dispatch from the storage tanks in case the sugar factory and the attached distillery have separate storage facilities.

9. If required, the Excise authorities may compare B-Hy molasses purity being recorded by the factory with the purity obtained during the corresponding period of earlier three crushing seasons and in normal circumstances a variation of not more than (-) 5% in the B-Hy molasses purity shall be considered. For the factories which have not operated earlier, the brix and purity of B-Hy molasses shall be inferred from the purities recorded by nearby factories or shall be considered as minimum 46.0. The factories undertaking B-Hy diversion shall get the analysis process and quantity of molasses diversion validated from some reputed institute as and when Excise Authorities direct so.
10. At the distillery i.e. ethanol unit end also, recording of molasses consumption, ethanol production, distillation and fermentation efficiency shall be done. The distillery shall analyse and record the data in respect of quality of molasses at the time of its use. For facilitating the analysis of C-Hy or B-Hy molasses for different parameters and for ethanol content, factories shall seek assistance of NSI/VSI or any NABL accredited laboratory only.
11. Distillation units shall weigh and record the quantity of either type of molasses used and ethanol produced out of it so as to ascertain the yield and potential. The facilities shall be put in place for actual weighment of molasses used and ethanol produced for both B-Hy and C-Hy molasses.
12. To assess additional sugar sacrificed due to diversion of B-Hy molasses instead of conventional C-molasses, loss in sugar sacrificed shall be worked out on the basis of provisions contained in Sugarcane Control (Order), 1966 .

“When a sugar factory produces ethanol directly from sugarcane juice or B-Heavy molasses, the recovery rate in case of such sugar factory shall be determined by considering every 600 litres of ethanol so produced as equivalent to one ton of production of sugar”. This will indicate the total quantity of sugar loss through B-Hy molasses.

The loss in recovery on account of sugar sacrificed due to diversion of B-Hy molasses shall be derived and required to be adjusted by adding it with the sugar recovery being recorded by the sugar factory so as to facilitate calculation of FRP of sugarcane.

13. The additional loss of sugar through B-Hy molasses shall be determined by *“sugar loss in B-Hy molasses minus sugar loss which could have occurred in case of C-Hy molasses diversion”*. For determining loss of sugar in “C Hy molasses” had it been a conventional 3- massecuite boiling system, average sugar loss in C-Hy molasses shall be determined on the basis of C-Hy molasses purity of preceding three sugar seasons when the factory discharged C-Hy molasses as Final Molasses. The additional loss of sugar

through diversion of B-Hy molasses shall be added back in the sugar recovery being recorded by the sugar mill so as to facilitate calculation of FRP of sugarcane for that sugar season or wherever required.

14. In case the sugar factory has not operated for three seasons or being a green field project, the C- molasses purity/total fermentable sugar content shall be assumed as:

For Primary Juice Purity up to 81	- 30.0/40.00
For Primary Juice Purity, 81-84	- 31.5/42.00
For Primary Juice Purity above 84	- 33.0/45.00

Or

Otherwise, "C molasses" purity & total fermentable sugar content of the neighbouring factories having comparable juice purities and process shall be considered for the sake of calculation.

15. The quality of the ethanol produced by either of the routes shall conform to the requirement of OMC's as specified in their tender document.

16. The ethanol produced through two different routes i.e. C-heavy and B-heavy molasses shall be certified by the concerned state excise department with unique serial number for each container for proper identification. The invoice of ethanol carried with ethanol loaded container shall have endorsement by excise officials with the serial number of the certificate (referred above) attached with the consignment.

17. OMCs shall receive the ethanol produced from B-Hy and C-Hy molasses, only after receipt of Certificate/Permit/Authorized Pass issued by competent Excise Authority.

18. The sugar mills are also required to provide the data on B-Hy and C-Hy molasses generated and diverted for production of ethanol as also production of ethanol from both B-Hy and C-Hy molasses in the monthly Proforma P-II to the Directorate of Sugar and VO through the on-line portal for which the said Proforma is being separately amended.