Asian Journal of Chemistry Vol. 3, No. 4 (1992), 659–660

NOTE

Low Temperature Carbonization of Spent Wash or Stillers from Alcohol Distillery

P. A. LIMAYE

Poona School of Sciences
339, Navi Peth (Sadashiv Peth), Pune-411 030, India

Catalytic low temperature carbonisation of spent wash or stillers from alcohol distillery, by concentrated hydrochloric acid, has been described giving 25–30 tonnes of carbon which may serve as fuel on large scale treatment, about 7 tonnes potash fertiliser daily and water extract free from caramel colour with B.O.D. reduced from 90,000 to 1,000. This will completely remove the trouble of pollution faced by distilleries and people at large surrounding the distillery area.

Stillers or alcohol distillery spent wash is a problem to all countries. The methods used at present to get rid of the problem are: (1) Methane gas production, (2) Composting, (3) Concentration Incineration.

Method 1. It has not proved so successful as the yeast cells consume almost all easily assimilable part of molasses for producing alcohol and for its growth[1].

Method 2. Composting is good for cellulose waste as cellulose is converted into glucose very slowly and consumed by bacteria properly, immediately without giving rise to percolation pollution in surrounding wells or otherwise. The distillery spent wash is rather much simpler polysaccharide than cellulose and has a heavy water volume and high carbon contents as far as nitrogen contents is considered. It therefore gives rise to heavy percolation pollution in surrounding wells or otherwise[2].

Method 3. Incineration concentration requires intricate cumbersome costly Machinery[3,4].

The method described here requires very simple equipment and with proper precautions will make the process very feasible and economical.

Spent wash was received from a sugar factory distillery; B.D.H. paper 2–4 to 10 range was used; concentrated hydrochloric acid c.p. quality was used, distilled water was used for washing. Spent wash was taken in two corning beakers (2 litres) (2,500 ml.). It was heated, concentrated and concentrated hydrochloric acid was added to it and stirred thoroughly to make the mass homogeneous. The solution (pH 2 range) was cooked at 105°C for 7–8 hrs by low heat with intermittent stirring. A swollen black carbonaceous mass was formed. It was allowed to cool. It was filtered and the carbonaceous mass was washed with limited quantity of

water and dried. Yield ~150 gms. The filtrates are concentrated to get again negligible carbon and potash. It is filtered and dried ~35 gms. The filtrate on further heating yields a swollen mass which when washed and filtered gives carbon ~25 gms. and almost colourless solution (volume little less than original) with B.O.D. reduced to 1,000 from 90,000, C : N ratio is highly reduced, pH 6.0, N about 0.8% of the filtrate and sufficient K and P. The above solution can then be used for sprinkling composting material and make available useful organic fertiliser.

As far as daily spent wash is considered, the process will run economically, if proper precautions be taken and the trouble of pollution will be overcome. Daily 30 tonnes of carbonaceous material and 7 tonnes of potash will be available per factory. No intricate machinery will be required.

REFERENCES

1. Belganga Sahakari Sakhar Karkhana Ltd., Chalisgaon (Maharashtra State).
2. Sahakar Maharshi Shankar Rao Mohite Patil Sahakari S.S.K. Ltd., Akluj (Dist. Sholapur, Maharashtra State).
3. Maharashtra State Govt. Distillery, Chitali (Dist. Ahmednagar, Maharashtra State).
4. Polychem Ltd., Nira (R.S.) (Dist. Pune, Maharashtra State).

[*Received*: 18 December 1990; *Accepted*: 15 March 1991] AJC-327