CRUDE OIL ANALYSIS

By DAVID WESSON

In the September issue an account was given of an accurate method for determining exactly the amount of refined oil in any given sample of crude. The application of this method to factory control and the purchasing of crude oil was not mentioned.

Knowing the amount of refined oil in a given sample of crude and the efficiency of factory refining operation it is very evident that a factor can be used to show the maximum loss which should be expected.

It is evident in studying the tables, 5a, 5b, 5c and 5d*, that the average refining efficiency on the prime oils handled was 96.3 per cent, while the average kettle yield was 93.85 per cent of the crude worked. The absolute oil found, multiplied by refining efficiency, should equal the kettle yield.

The average absolute oil from the 40 refinings in the above tables was 97.3 per cent, which multiplied by the average efficiency gives us 93.7 —the average yield to be expected. 100 minus 93.7 equals 6.30 average refining loss.

This can be arrived at another way by adding the absolute loss to 100 minus efficiency per cent. Thus, the average efficiency being 96.3 per cent we have efficiency loss of 3.70. 3.70 plus the average absolute loss of 2.70 gives us a loss of 6.40, as against 6.30 as shown above.

When it is considered that the 40 refinings were all made at a very high efficiency, it would seem fair to add a factor of 4 to the absolute loss on an oil, assuming a refining efficiency of 95. This would give a factor of safety in buying oils, and at the same time be a nearer approximation to average kettle results than we obtain by the hard refining tests as now carried out.

The present refining test does not agree closely with the kettle results in most cases for the following reasons: First, the sample tested in the laboratory does not represent the oil in the kettle unless taken from a kettle during thorough agitation.

Average tank car samples taken from the tank cars are not accurately representative. This is proven by comparing the acidity of such samples with that of the same oil after thoroughly mixing in a refining kettle.

Second, the refining conditions in the laboratory differ greatly from those in the kettle and very different results are frequently obtained.

With off oils, the stirring apparatus in both kettle and the laboratory is very inefficient as can be proven by results. The efficiency can be determined exactly by means of the absolute oil test, and the correction of refining apparatus becomes a mechanical problem.

*Journal of Oil & Fat Industries, 3, 9, 300-301.

Referring to the previous communication, one or two points should be made clear. Any good 95% alcohol or formula 30 can be used in making the test.

Caustic potash is used instead of caustic soda because it forms a liquid soap easily soluble in the alcohol water mixture.

The quantity of caustic potash used is equal to 10 per cent of caustic soda on the weight of the oil. It is therefore sufficient to saponify 70 per cent fatty acid in the oil and is many times the amount ever used in practice.

In conclusion it is recommended that the value of crude oils be determined by determining the amount of absolute oil contained and estimation of the probable loss by adding a suitable factor to the absoluate loss.

In addition to the above test a laboratory refining should be made with a specified excess of caustic soda of sufficient strength to determine the color of refined oil which can be made from a given sample of crude.

CAN BORROW ON COTTONSEED

Cottonseed warehouse receipts will be regarded as sound and acceptable collateral under regulations just promulgated by the Secretary of Agriculture for storage of such seed, as the result of a careful study of the commodity by department officials and the Federal Reserve Board.

Some time ago the board ruled that cottonseed was non-perishable when stored under proper conditions, and readily marketable within the meaning of the Federal Reserve act. At a recent conference it was disclosed that many warehouses were owned by the same persons who owned the seed. By previous rulings it was necessary for the commodities, to be good collateral, to be leased to parties having no interest in the product in storage. There was a ruling also that the borrower should have no access to the premises in which the cottonseed was stored.

The department's ruling follows:

"Bankers' acceptances secured by cottonseed stored in a warehouse owned by the owner of the cottonseed but leased to an independent public warehouse corporation under bona fide lease, the corporation assuming executive control and management of such warehouse, operating it as a public warehouse, bonded and licensed under the United States Warehouse act, may be eligible for rediscount at a Federal Reserve Bank, although the owners of the cottonseed are permitted access to the seed in storage at proper and reasonable times for the purpose only of inspecting the condition of the seed; provided that on all such occasions the consent of the independent warehouse corporation is first secured, and that the owner of the seed or his representative is accompanied by a proper representative of the warehouse corporation."