

SYMPOSIUM ON STABILITY OF DISTILLATE FUEL OILS

INTRODUCTION AND SUMMARY

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INTRODUCTION

At the reorganization meeting of Technical Committee E of Committee D-2 on Petroleum and Petroleum Products in October 1957, four subcommittees were formed, for specifications for light and heavy fuel oils, combustion tests, and pumpability. However, when a subcommittee on stability was proposed, the ensuing discussion revealed a wide variance of opinion as to whether such a subcommittee was needed. Because of this, it was decided to hold this Symposium on Stability of Distillate Fuel Oils in order to get a broad view of the present status of stability problems in distillate fuels and to provide a background for any future action that ASTM might take along these lines.

The papers that comprise this symposium should help bring into focus the various types of stability problems, give some idea of their size, and tell what has been, is being, or perhaps should be done to relieve them. A wide industry viewpoint is represented. Although we might all agree that certain conditions exist, we might, depending upon our point of view, have different opinions as to what should be done about them.

Before proceeding, it might be well

to define stability for the purposes of this introduction:

Stability is basically defined as the performance of the fuel; the quality of being able to endure without material change; resistance to breakdown or decomposition. A stable fuel should not form soluble gums or insoluble residues; it should not change color or darken. Some of these aspects of stability are of more practical importance than others. Also included under stability in most people's minds is the ability to resist gel, soap, or emulsion formation when the fuel is brought in contact with various metals, acids, water, or other constituents; also the ability to remain clean when mixed with other fuels. For the purposes of this symposium the term is given the broadest possible coverage; the individual papers enlarge upon these various aspects.

SUMMARY

It is shown that great advances have been made over the past five or so years in improving the stability of distillate fuel oils. This was brought about through improved refining and treating processes and increased use of additives. Partly because of this and partly causing this is the fact that heating oil has taken on the stature of a major refinery product. Consumers are verifying this improvement by reporting fewer complaints traceable to fuel causes.

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Further improvement in stability is still necessary, however, because of the modern trend to smaller, more compact, and more efficient equipment as typified by the smaller nozzles. Further improvement in stability is desirable, also, because even the present reduced number of complaints represents a sizable number of service dollars.

Incompatibility is one of the more illusive aspects of stability, since it is further from the control of the individual refiner and will probably prove to be the hardest form of instability to detect and overcome. Gel is a special problem that requires special tests and treatment.

Progress in establishing an acceptable industry-wide stability test or specification has lagged. A specifica-

tion is considered desirable by the dealers and distributors of fuel oil. It is considered a necessity to large consumers who purchase from many sources. It has been mentioned that the Navy is sponsoring a diesel fuel co-operative group which is attempting to find and adopt the most satisfactory accelerated stability test as soon as possible. An acceptable stability specification should follow.

The problems in burning heavier fuel oils have been touched upon, and it is obvious that there are problems related to stability and burning of these fuels that could stand much improvement—realizing, of course, that this must be done at low cost.

In conclusion I wish to acknowledge the good work and cooperation of our individual authors and to thank them for their efforts.