

SYMPOSIUM ON DETERMINATION OF GASES IN METALS

INTRODUCTION

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It is the responsibility of ASTM Committee E-3 to develop methods for the chemical analysis of metals. As part of this responsibility, the committee started in 1956 to hold an Annual Symposium which is to be on the subjects of current interest to ASTM members concerned with the analysis of metals. The subject chosen for this year is timely because with the advent of the reactive metals, titanium and zirconium, and more stringent specifications for other metals, for example, electronic nickel, there has been a great increase in the demand for methods for estimating the oxygen, hydrogen, and nitrogen contents of metals.

Vacuum fusion analysis has been used for many years for the determination of gaseous elements in steels and alloys, but the apparatus was complex and fragile and the analysis so time-consuming that it was seldom made except for the guidance of research work. Until recently there was no commercial ap-

paratus available. Each laboratory was forced to assemble the necessary equipment. Now that commercial equipment of several types is available, it appeared desirable to review the conventional vacuum fusion apparatus and describe some modifications in technique that have been introduced in attempts to secure more reliable test results faster and cheaper.

Further study of the problem of determining oxygen in metals has lead to the development of two radically different techniques which will be described. Since one of these techniques involves the use of an emission spectrograph to estimate the oxygen after it has been evolved from the metal sample, this paper appears under the joint sponsorship of Committee E-3 and Committee E-2 on Emission Spectroscopy.

It is hoped that these discussions of equipment and technique will prove of value to the membership of the society who are faced with the problem of setting up procedures for the estimation of gaseous elements in the newer metals that are rapidly becoming of considerable commercial importance.

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