



Designation: E 365 – 99

## Standard Test Method for the Determination of Vanadium in Ferrovandium and Vanadium Alloying Additives<sup>1</sup>

This standard is issued under the fixed designation E 365; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This test method covers the chemical analysis of ferrovanadium, vanadium carbide, and vanadium-aluminum having chemical compositions within the following limits:

Element	Concentration Range, %
Aluminum	0.01 to 65
Carbon	0.01 to 20
Chromium	0.01 to 1
Manganese	0.01 to 1
Silicon	0.05 to 10
Vanadium	25 to 90

1.2 The test methods in this standard are contained in the sections below:

	Sections
Vanadium by the Permanganate Oxidation—Ferrous Ammonium Sulfate Titration Method	9 to 15

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use. Specific hazard statements are given in Section 5 and in special “Warning” paragraphs throughout these test methods.*

### 2. Referenced Documents

#### 2.1 ASTM Standards:

- A 102 Specification for Ferrovandium<sup>2</sup>
- D 1193 Specification for Reagent Water<sup>3</sup>
- E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications<sup>4</sup>
- E 32 Practices for Sampling Ferroalloys and Steel Additives for Determination of Chemical Composition<sup>5</sup>

<sup>1</sup> These test methods are under the jurisdiction of ASTM Committee E-1 on Analytical Chemistry for Metals, Ores, and Related Materials and are the direct responsibility of Subcommittee E01.01 on Iron, Steel, and Ferroalloys.

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<sup>2</sup> *Annual Book of ASTM Standards* Vol 01.02.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 11.01.

<sup>4</sup> *Annual Book of ASTM Standards*, Vol 14.02.

<sup>5</sup> *Annual Book of ASTM Standards*, Vol 03.05.

E 50 Practices for Apparatus, Reagents, and Safety Precautions for Chemical Analysis of Metals<sup>5</sup>

E 173 Practice for Conducting Interlaboratory Studies of Methods for Chemical Analysis of Metals<sup>5</sup>

E 882 Guide for Accountability and Quality Control in the Chemical Analysis Laboratory<sup>6</sup>

### 3. Significance and Use

3.1 These test methods for the chemical analysis of metals and alloys are primarily intended as referee methods to test such materials for compliance with compositional specifications, particularly those under the jurisdiction of ASTM Committee A1 on Steel, Stainless Steel, and Related Alloys, specifically Specification A 102. It is assumed that all who use these methods will be trained analysts capable of performing common laboratory procedures skillfully and safely. It is expected that work will be performed in a properly equipped laboratory under appropriate quality control practices such as those described in Guide E 882.

### 4. Reagents

#### 4.1 Reagents:

4.1.1 *Purity of Reagents*—Unless otherwise indicated, all reagents used in these test methods shall conform to the “Reagent Grade” Specifications of the American Chemical Society.<sup>7</sup> Other chemicals may be used, provided it is first ascertained that they are of sufficiently high purity to permit their use without adversely affecting the expected performance of the determination, as indicated in the section on “Precision and Bias.”

4.1.2 *Purity of Water*—Unless otherwise indicated, references to water shall be understood to mean reagent water as defined by Type II of Specification D 1193.

<sup>6</sup> *Annual Book of ASTM Standards*, Vol 03.06.

<sup>7</sup> *Reagent Chemicals, American Chemical Society Specifications*, American Chemical Society, Washington, DC. For suggestions on the testing of reagents not listed by the American Chemical Society, see *Analar Standards for Laboratory Chemicals*, BDH Ltd., Poole, Dorset, U.K., and the *United States Pharmacopoeia and National Formulary*, U.S. Pharmaceutical Convention, Inc. (USPC), Rockville, MD.