



American National Standard/  
American Dental Association  
Specification No. 93

# Dental Brazing Investments

Identical to ISO 11244:1998



American Dental Association  
Council on Scientific Affairs 2000

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**AMERICAN NATIONAL STANDARD/AMERICAN DENTAL ASSOCIATION  
SPECIFICATION NO. 93 FOR DENTAL BRAZING INVESTMENTS**

The Council on Scientific Affairs of the American Dental Association has approved American Dental Association Specification No. 93 for Dental Brazing Investments. This and other specifications for dental materials, instruments and equipment are being formulated by subcommittees of the ADA Standards Committee on Dental Products (formerly Accredited Standards Committee MD156 for Dental Materials, Instruments and Equipment). The Committee has representation from all interests in the United States in the standardization of materials, instruments and equipment in dentistry. The Council has adopted the specifications, showing professional recognition of their usefulness in dentistry, and has forwarded them to the American National Standards Institute with a recommendation that the specifications be approved as American National Standards. The American National Standards Institute granted approval of ADA specification No. 93 as an American National Standard on March 23, 2000. This standard becomes effective March 23, 2001.

The Council thanks the working group members and the organizations with which they were affiliated at the time the specification was developed: Atul Sarma (Chairman), Whip Mix Corporation, Louisville, KY; Carlos Munoz (Secretary), Loma Linda University, Loma Linda, CA; Dennis Davis, University of California, San Francisco; Waldemar DeRijk, BISCO, Inc., Schaumburg, IL; Fred Eichmiller, National Institute of Standards and Technology, Gaithersburg, MD; Abdul Khan, CMP Industries, Albany, NY; Daniel Menis, Harry J. Bosworth Co., Skokie, IL; Carl Panzera, American Thermocraft, Somerset, NJ; and Nikhil Sarkar, Louisiana State University, New Orleans.

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**FOREWORD**

(This foreword does not form a part of the ANSI/ADA Specification No. 93 for Dental Brazing Investments)

This specification is an adoption of the ISO Standard 11244:1998 for Dental Brazing Investments.

The ADA SCDP Working Group examined the standard and found it acceptable for adoption as ANSI/ADA Specification No. 93.

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**1. SCOPE**

**1.1 Scope**

This national standard establishes a classification of and specifies requirements for dental brazing investments. It specifies test methods to be used to determine compliance with these requirements. It lists information which shall be included in the manufacturer's instructions and also gives requirements for labeling.

**2. DEFINITIONS**

For the purposes of this national standard, the following definitions apply:

**2.1 Brazing, Brazing Process**

Process of joining generally applied to metals in which, during or after heating, molten filler metal is drawn into or retained in the space between closely adjacent surfaces of the parts to be joined by capillary attraction.

**Note 1:** In general, the melting range of the filler metal is above 450 °C, but always below the melting temperature of the parent metal.

**2.2 Brazing Investment**

Blend of refractory fillers and binding system specially designed to allow the formation of a model on which dental restoration components are held in place while they are being joined by brazing.

**2.3 Gypsum-Bonded Dental Brazing Investment**

Refractory filler system and binding system consisting essentially of calcium sulfate hemihydrate, specially designed for use when brazing dental alloy restorations.

**2.4 Phosphate-Bonded Dental Brazing Investment**

Refractory filler system and binding system consisting essentially of an acidic phosphate (such as monoammonium phosphate) and a basic oxide (such as magnesium oxide) specially designed for use when brazing dental alloy restorations.

**2.5 Special Liquid**

Liquid, consisting mainly of a suspension of colloidal silica particles in water, made available by the manufacturer or supplier for mixing with the brazing investment powder for the purpose of increasing thermal expansion.

**3. CLASSIFICATION**

Dental brazing investments are classified into two types according to their composition:

**Type 1:** Gypsum-bonded dental brazing investments

**Type 2:** Phosphate-bonded dental brazing investments

Unless the manufacturer states otherwise, Type 1 shall be used with brazing alloys having brazing temperatures below 1,000 °C and Type 2 with those having brazing temperatures above 1,000 °C.

**4. REQUIREMENTS**