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**Dentistry — Dental units —**  
**Part 2:**  
**Water and air supply**

*Art dentaire — Units dentaires —*

*Partie 2: Alimentation en eau et en air*

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Published in Switzerland

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 7494-2 was prepared by Technical Committee ISO/TC 106, *Dentistry*, Subcommittee SC 6, *Dental equipment*.

This first edition of ISO 7494-2, together with ISO 7494-1, cancels and replaces ISO 7494:1996, which has been technically revised.

ISO 7494 consists of the following parts, under the general title *Dentistry — Dental units*:

— *Part 2: Water and air supply*

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The following part is under preparation:

— *Part 1: General requirements*

## Introduction

The requirements for water and air supply of dental units have been discussed extensively in TC 106/SC 6/WG 2, and it was concluded that the technical specifications for the water and air lines within dental units are sufficiently defined while the microbiological side of the problem is not addressed.

The formulation of criteria in order to avoid or reduce biofilm on the surfaces in water and air lines was considered difficult. Because the current technical state of the art does not provide an all-inclusive solution, no agreement could be reached. Therefore it was agreed to publish first the general technical requirements for the water and air lines as an International Standard. In the next step it is envisaged to find a solution for the microbiological problems, including evaluation criteria for controlling or removing dental waterline biofilm.

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# Dentistry — Dental units —

## Part 2: Water and air supply

### 1 Scope

This part of ISO 7494 specifies requirements and test methods for the materials, design and construction of the water and air supply within dental units in order to ensure that the compressed water and air supplied via the dental unit are of appropriate quality. It includes provisions for the prevention of retraction of oral fluids into the water supply of the dental unit.

This part of ISO 7494 does not address prevention of contamination and/or proliferation of hazardous micro-organisms (for example bacteria, viruses) in the dental unit.

### 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 7494:1996, *Dental units*

ISO 11144, *Dental equipment — Connections for supply and waste lines*

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

#### 3.1

##### **procedural water**

water supplied by the dental unit for use in the oral cavity

EXAMPLE Handpiece coolant water, syringe water, scaler coolant water or rinse cup water.

#### 3.2

##### **non-procedural water**

water supplied by the dental unit for purposes other than use in the oral cavity

EXAMPLE Cuspidor bowl rinse water or water venturi supply water.

#### 3.3

##### **incoming water**

water supplied to the dental unit for procedural or non-procedural use

**3.4  
incoming solution**

solution of substances defined by the manufacturer and introduced in combination with, or in place of, the incoming water in order to improve or maintain the quality of the procedural water or for other reasons

NOTE Other reasons may be as coolant for cutting burs, medicament for oral cavity, etc.

**3.5  
bottled water system**

water supply system that is based on a reservoir supplying procedural water or solution separately from the incoming water from the municipal water supplier

**3.6  
outgoing water**

water emerging from the dental unit

**3.7  
outgoing solution**

solution of substances, defined by the manufacturer, emerging from the dental unit in combination with, or in place of, the outgoing water

**3.8  
retraction**

re-entry of water, air and/or other medium into the dental unit or the dental instruments due to flow reversal

NOTE Retraction may be caused e.g. by momentary dynamic pressure variations during turning off the instruments.

**3.9  
backflow**

flow of water, air and/or another medium back into the municipal water supply via the dental unit

**3.10  
wastewater**

any solution that is discharged into the drainage system from the dental operatory

NOTE Wastewater may be discharged from e.g. the cuspidor, saliva ejector, water separator, amalgam separator.

**3.11  
incoming-water connection point**

any port on the dental unit for connection to a municipal water supply

**3.12  
wastewater connection point**

port for the connection through which wastewater flows and is discharged into the drains

**3.13  
incoming air**

compressed air supplied to the dental unit

**3.14  
incoming-air connection point**

any port on the dental unit for connection to a compressor

**3.15  
backflow-prevention device**

device to prevent backflow

EXAMPLE Pipe disconnecter or air gap.

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**3.16****cleaning system for suction or wastewater lines**

system for cleaning the suction or wastewater lines configured in such a way that the suction or wastewater tubes are connected to the procedural water supply for flushing

**3.17****rinse water**

water for cleaning

**3.18****spill-over level**

highest possible level of water or solution in a device above which the fluid spills over the edge

**3.19****water venturi**

device using water flow to produce a vacuum

**3.20****water-disinfection system**

system intended to reduce the number of colony-forming units of bacteria per millilitre of water or solution

**3.21****antibacterial filter**

filter intended to trap and reduce bacteria in the procedural water or in the compressed air

**3.22****dental air**

common ambient air available in the dental office, used for dental procedures in the oral cavity of the patient

NOTE This air is different from medical air used for anaesthetic purposes or for surgical purposes (e.g. during endoscopy).

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**4 Requirements for the water supply****4.1 General**

All connections shall be in accordance with ISO 11144. A schematic diagram of possible water connections in dental units is given in Figure 1.

**4.2 Materials used for construction of procedural water systems within the dental unit**

The dental unit shall be designed and constructed so that the materials which come into contact with procedural water or solutions, or that are likely to come into contact with them, do not cause any adverse effects on the quality of the procedural water or solution.

For the construction of procedural water or solution lines, only materials which have been approved by water quality authorities, if available, shall be used.

The materials used within the water path shall be listed together with the respective International Standard with which they comply, if applicable.

Test in accordance with Clause 7.