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# International Standard



# 7741

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## **Instruments for surgery — Scissors and shears — General requirements and test methods**

*Instruments chirurgicaux — Ciseaux et cisailles — Spécifications générales et méthodes d'essai*

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**Descriptors :** medical equipment, surgical equipment, surgical scissors, specifications, tests, performance tests.

## 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 7741 was prepared by Technical Committee ISO/TC 170, *Surgical instruments*.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

# Instruments for surgery — Scissors and shears — General requirements and test methods

## 1 Scope and field of application

This International Standard specifies general requirements and corresponding routine test methods for scissors and shears which are used in surgery.

## 2 References

ISO 683/13, *Heat-treated steels, alloy steels and free-cutting steels — Part 13: Wrought stainless steels.*

ISO 4957, *Tool steels.*

ISO 6507/1, *Metallic materials — Hardness test — Vickers test — Part 1: HV 5 to HV 100.*

ISO 6508, *Metallic materials — Hardness test — Rockwell test — Scales A, B, C, E, F, G, H.<sup>1)</sup>*

ISO 7153/1, *Instruments for surgery — Metallic materials — Part 1: Stainless steel.*

## 3 Material

### 3.1 Component parts

The component parts of the instruments, excluding the rivet or screw, shall be made of stainless steel in accordance with table 1.

Table 1 — Material — Steel grades

Reference letter according to ISO 7153/1	Steel grade	
	Grade No. according to ISO 4957	ISO 683/13
B*	27*	4*
C**	28	5
D	—	—
H	—	—
I	—	—

\* Only for scissors and shears with tungsten carbide or stellite inserts.

\*\* Special attention should be given to meeting the requirements of 4.1.2.

### 3.2 Rivet or screw

The rivet or screw shall be made of stainless steel chosen, at the discretion of the manufacturer, from the grades specified in ISO 683/13.

## 4 Requirements

### 4.1 Heat treatment and hardness for component parts, excluding rivets and screws

#### 4.1.1 Heat treatment

The component parts of the instruments shall be heat treated under suitable conditions to ensure compliance with the requirements of 4.1.2 and 4.1.3 for the material used.

#### 4.1.2 Hardness for instruments without tungsten carbide or stellite inserts

The Rockwell hardness of the finished instruments shall be within the range from 50 HRC to 58 HRC (approximately equivalent to Vickers hardness range from 530 HV to 670 HV) when tested in accordance with ISO 6508 and ISO 6507/1, respectively. Opposite blades shall not vary in hardness by more than 4 units on the Rockwell C hardness scale.

#### 4.1.3 Hardness for instruments with tungsten carbide or stellite inserts

The Vickers hardness of the tungsten carbide or stellite inserts shall be at least 710 HV 10 when tested in accordance with ISO 6507/1. The inserts of opposite blades shall not vary in hardness by more than 50 units on the Vickers HV 10 hardness scale.

The Rockwell hardness of the body of the instruments with tungsten carbide or stellite inserts shall be 40 HRC min.

### 4.2 Corrosion resistance

#### 4.2.1 Scissors and shears made of steel grade C

Two test methods are specified for determining corrosion resistance (see 4.2.3 and 4.2.4). Both of these tests shall be carried out.

1) At present at the stage of draft. (Revision of ISO/R 80-1968 and ISO 2713-1973.)