



Material Specifications

A On the following pages you can find information about the materials, used by ASIM INSTRUMENTS for manufacturing several kinds of instruments.

Definition “High Grade Steel”

The standardized term “High Grade Steel” , used by many manufactures as a special characteristic of their products does not say more than steel’s cleanness, concerning the unwanted alloy components phosphorus and sulphur do not exceed percentual limits. A high alloyed tool-steel can also be a “High Grade Steel”.

Sources of Supply

The ASIM INSTRUMENTS purchases all materials for 1A products, as forging for scissors or forceps, from well known suppliers. We do not have any direct influence on the production of these materials, but we are successfully trying to keep the quality of our products on a high level constantly, by careful selection of our supplier.

Models

Normally all forging for a product is purchased from the same supplier. In the case of delivery problems, we are however forced to buy from alternative supplier. This matter may be reason for minor deviation in models and sizes. This deviations do not have any effects on function or quality of the instrument. We are always trying to keep changes or deviations as bearable as possible.

High Grade Stainless Steel

Mat.Nº: 1.4117

Used for: Scissors*, Bone Rongeurs*, Bone Cutting Forceps*, Conchotomes*, Skalpels, Knives, Chisels, Curettes, Sharp Spoons, Dental Probes, Dental Drills.
 Shortcut: X 38 CrMoV 15 (DIN 17442)
 AISI synonym: -
 Characteristics: martensitic, magnetic, hardness (hardened) 50-58 HRC
 Alloy:

%C	%Si	%Mn	%P	%S	%Cr	%Mo	%Ni	%CU	N
0.35-0.4	≤1	≤1	≤0.045	≤0.03	14-15	0.4-0.6	-	-	-

Mat.Nº: 1.4021

Used for: Scissors with TC Inlets, Diss. Forceps*, Ring Forceps*, Bone Rongeurs, Bone Cutting Forceps, Forceps*, Conchotomes*, Retractors*, Rigid Probes*, Chisels*, Curettes*, Sharp Spoons*, Springs, Full Handles, Screws, Nuts, Dental Pliers, Extractors*, Drills, Ales.
 Shortcut: X 20 Cr 13 (EN 10088,-1,-2,-3, DIN 17440, 17441, 17442)
 AISI synonym: 420
 Characteristics: martensitic, magnetic, hardness (hardened) 40-47 HRC
 Alloy:

%C	%Si	%Mn	%P	%S	%Cr	%Mo	%Ni	%CU	N
0.16-0.25	≤1	≤1.5	≤0.044	≤0.03	12-14	-	-	-	-



Mat.Nº: 1.4034

Used for: Scissors, Rongeurs, Bone Cutting Forceps, Conchotomes, Skalpels*, Knives*, Dental Probes, Drills, Ales, Medullary Reamers*.
 Shortcut: X 40 Cr 13 (EN 10088,-1,-2,-3, DIN 17441)
 AISI synonym: -
 Characteristics: martensitic, magnetic, hardness (hardened) 55 HRC
 Alloy:

%C	%Si	%Mn	%P	%S	%Cr	%Mo	%Ni	%CU	N
0.43-0.5	≤1	≤1	≤0.04	≤0.03	12.5-14.5	-	-	-	-

Mat.Nº: 1.4305

Used for: Probes, Handles (full)*, Screws*, Nuts*, Components with low demand*.
 Shortcut: X 12 CrNi 18 9 (EN 10088,-1,-2,-3, DIN 17440)
 AISI synonym: 303
 Characteristics: Machine Steel, austenitic, non magnetic, not for hardening (18/8)
 Alloy:

%C	%Si	%Mn	%P	%S	%Cr	%Mo	%Ni	%CU	N
≤0.1	≤1	≤2	≤0.045	0.15-0.35	17-19	-	8-10	≤1	≤11

Mat.Nº: 1.4301

Used for: Suction Tubes*, Spekula*, Retractor Blades*, Containers*, Flexible Probes*, Guide Pins.
 Shortcut: X 12 CrNi 18 8 (EN 10088,-1,-2,-3, DIN 15512T1, 17440,-441,-442,-455,-456,-457,-458,-EEN 10222-5, EEN 10028-7, EEN 10272)
 AISI synonym: 304/304H
 Characteristics: austenitic, non magnetic, malleable (soft).
 Alloy:

%C	%Si	%Mn	%P	%S	%Cr	%Mo	%Ni	%CU	N
≤0.07	≤1	≤2	≤0.045	≤0.03	17-19.5	-	8-10.5		≤0,11

Mat.Nº: 1.4310

Used for: Springs*.
 Shortcut: X 12 CrNi 17 7 (EN 10088,-1,-2,-3, DIN 17440,-441,-455 bis 458)
 AISI synonym: 301
 Characteristics: spring steel, austenitic, non magnetic
 Alloy:

%C	%Si	%Mn	%P	%S	%Cr	%Mo	%Ni	%CU	N
0.05-0.15	≤2	≤2	≤0.045	≤0.15	16-19	≤0.8	6-9.5		≤0,11



Mat.Nº: 1.4401

Used for: Measuring Gauges for Drills and Nails*.
 Shortcut: X 5 CrNiMo 18 10 (EN 10088,-1,-2,-3, DIN 1654T5, 5512T3, 17224,-440,-441,-455 bis 458, EEN 1022-5, EEN 10028-7, EEN 10272)
 AISI synonym: 316
 Characteristics: austenitic, non magnetic
 Alloy:

%C	%Si	%Mn	%P	%S	%Cr	%Mo	%Ni	%CU	N
≤0.07	≤1	≤2	≤0.045	≤0.03	16-18.5	2-2.5	10-13		≤0,11

Mat.Nº: 1.4441

Used for: Implants*, Prosthesis*.
 Shortcut: X 2 Cr Ni Mo 18 15 3 (DIN 17443)
 AISI synonym: 316 LVM
 Characteristics: implants steel
 Alloy:

%C	%Si	%Mn	%P	%S	%Cr	%Mo	%Ni	%CU	N
≤0.03	≤1	≤2	≤0.025	≤0.01	17-19	2.5-3.2	13-15.5	≤0.1	≤0,1

Non Iron Metals

Mat.Nº: 2.0402

Used for: Instruments for low demands
 Shortcut: CuZn40Pb2
 Characteristics: brass, normally chrome plated

Mat.Nº: 2.1030

Used for: slide-bearings
 Shortcut: CuSN8
 Characteristics: Bronze

Mat.Nº: 3.3315

Used for: Containers, Handles
 Shortcut: AlMg1
 Characteristics: Aluminum, light weight

Mat.Nº: Copper

Used for: Malleable Instruments as probes or spatulas, electric components
 Shortcut: Cu
 Characteristics: normally silver, chrome or nickel plated

Mat.Nº: Titanium

Used for: Implants, Clips, standard instruments as forceps or biopsy-forceps.
 Shortcut: Ti
 Characteristics: light weight, robust, expensive

Mat.Nº: New Silver

Used for: Malleable Probes, electr. contacts.



Precious Metal

Silver (Ag)

Mainly used for malleable copper instruments as plating.(galvanic)

Gold (Au)

Mainly used for marking instruments with TC inlets (galvanic)

Non Metal Materials (Plastics)

Ferrozell (HGW 2082)

Pressed material with synthetic resin and cotton .Used for handles and hammers.

Delrin (POM)

Handles, electric insulated components, mandrins

Teflon (PTFE)

Bearings, elected insulated components.

Natural Materials

Wood

Handles, cases

Replaced by synthetic materials more and more

Leather

Cases, pouches

Concluding remark

These pages are only a rough summary of the used materials for surgical instruments. Normally there are used much more materials in different alloys and characteristics, filling a book. Manufacturer's experience and changes in the manufacturing process make changes inevitable.

Literature/Standards

- Steel Key (Wegst-Verlag)
- Table-Book Metal (Europa Lehrmittel)
- Steel Standardization in "Fachkundefbuch Metall" (Europa Lehrmittel)
- DIN 100 Paperback (Beuth Verlag)
- DIN 17442 "Forged products or stainless steel for surgical instruments"
- DIN 58298 part 1-11 "Materials, construction and testing of surgical instruments"



Marking and Packing

General points

For identification and product history, all ASIM INSTRUMENTS products are marked with a suitable procedure (mainly etching) and a paper label (1 piece per position).

Exceptions

- Instruments, that cannot be etched, because of small size, material or surface attributes are shipped with the label only.
- Most implants are also marked dimensions (diameter, length)
- Products with serial number are labeled with the serial number instead of the lot/batch N°.

Labels

The label shipped with each order position contains the following information:

Address of manufacturer (ASIM INSTRUMENTS), Lot/Batch number, ASIM INSTRUMENTS Article N°, Customer Article N°, Quantity, Customer's Order data, Labeling/Etching, Important indications for use, CE-mark, Link to the valid instruction of use.

Packing

All ASIM INSTRUMENTS instruments are non-sterile (not sterile surgical blades), single packed in open poly bags. All items are cleaned mechanically, but must be cleaned and sterilized before use. All goods are shipped in cardboard boxes, packed unbreakable. Special packing is possible on customer's demands or in fact of the goods conditions.

Instruments supplied without etching:

Effective 14.06.1998 only medical devices that are CE-marked can be sold in European Union legally. The CE-marked must appear in conjunction with the manufacturer's name. Instruments, not marked with ASIM INSTRUMENTS CE-mark (also Etching and labeling according to the customer's wants) must be marked by the authorized customer..

Etching and labeling according to customer's wishes is possible for surcharge.