

TECHNI-PRO




















Training Program - 01. Tweezer materials



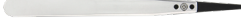

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Tweezer material selection guide*



									
METAL		NON-MAGNETIC	HARDNESS	CORROSION RESIST.	CHEMICAL RESIST.	CLEANROOM	TEMPERATURE RESIST.	ESD SAFE	BIOCOMPATIBILITY
	CX	Excellent	Very good	Very good	Excellent	Excellent	Very good	Good	Very good
	SA	Very good	Very good	Very good	Very good	Very good	Good	Good	Very good
	S	Poor	Excellent	Good	Good	Very good	Good	Good	Good
	C	Poor	Excellent	Poor	Poor	Very good	Good	Good	Good
	NC	Excellent	Very good	Very good	Excellent	Excellent	Very good	Good	Very good
	TA	Excellent	Poor	Excellent	Very good	Excellent	Very good	Good	Excellent
	N	Excellent	Poor	Good	Poor	Good	Poor	Good	Good
	BR	Excellent	Poor	Good	Poor	Good	Poor	Good	Good

COATING		NON-MAGNETIC	HARDNESS	CORROSION RESIST.	CHEMICAL RESIST.	CLEANROOM	TEMPERATURE RESIST.	ESD SAFE	BIOCOMPATIBILITY
	SA+DC	Very good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
	SA+NE	Very good	Very good	Very good	Very good	Excellent	Very good	Excellent	Good
	SA+T	Very good	Good	Very good	Very good	Very good	Excellent	Poor	Very good
	SA+DN	Very good	Poor	Very good	Very good	Poor	Poor	Excellent	Good

PLASTIC		NON-MAGNETIC	HARDNESS	CORROSION RESIST.	CHEMICAL RESIST.	CLEANROOM	TEMPERATURE RESIST.	ESD SAFE	BIOCOMPATIBILITY
	CP	Very good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Good
	CF	Very good	Very good	Very good	Very good	Excellent	Good	Good	Good
	SV	Very good	Good	Excellent	Excellent	Excellent	Good	Very good	Good
	DG	Very good	Good	Very good	Very good	Excellent	Poor	Poor	Good

CERAMIC		NON-MAGNETIC	HARDNESS	CORROSION RESIST.	CHEMICAL RESIST.	CLEANROOM	TEMPERATURE RESIST.	ESD SAFE	BIOCOMPATIBILITY
	SA+MZ	Very good	Excellent	Very good	Excellent	Excellent	Excellent	Poor	Excellent
	SA+ZJ	Very good	Excellent	Very good	Excellent	Excellent	Excellent	Excellent	Excellent

DEFINITION

NON-MAGNETIC Those materials which do not acquire magnetic properties, either transient or permanent, when placed in a magnetic field or subjected to a magnetization process

HARDNESS The resistance of a material to penetration

CORROSION RESISTANCE The capability of material to withstand the deterioration and chemical breakdown during surface exposure in a specific environment

CHEMICAL RESISTANCE The strength of a material to protect against chemical attack or solvent reaction

CLEANROOM A controlled environment typically used in manufacturing

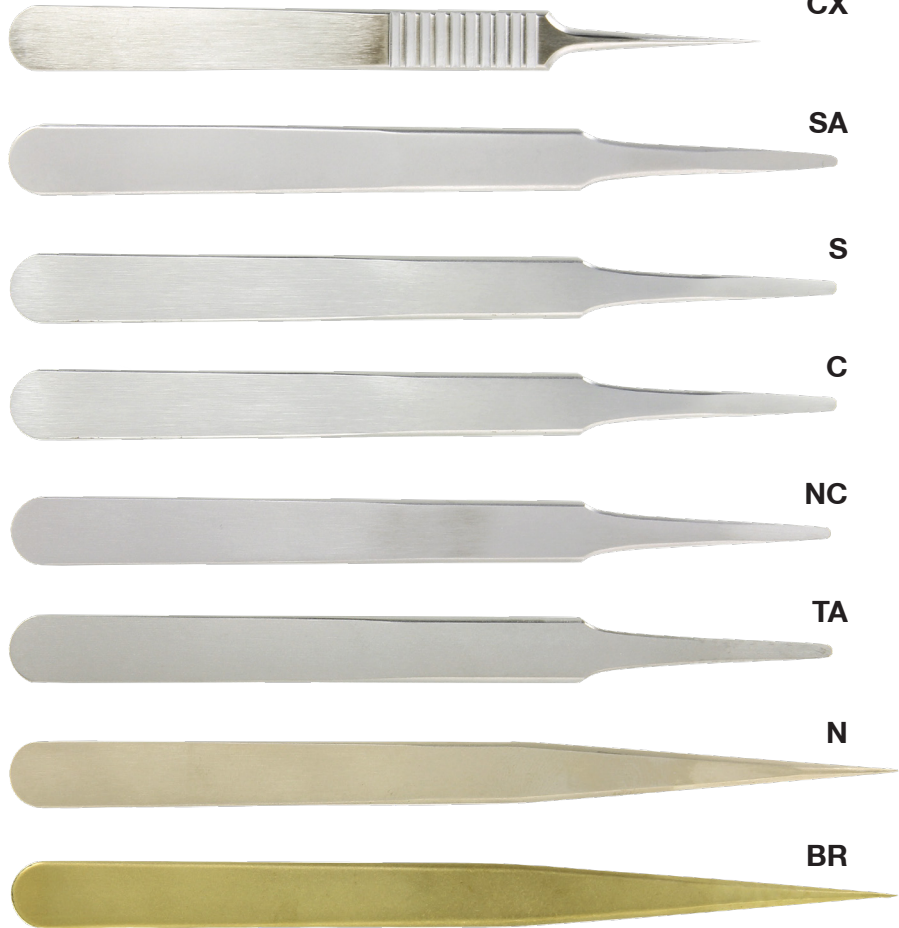
TEMPERATURE RESISTANCE The resistance of material properties to decrease as temperature increases

ESD SAFE A material that reduce static electricity to protect electrostatic-sensitive devices

BIOCOMPATIBILITY The capability of a material to exist in harmony with tissue without causing deleterious changes

* Material selection chart is intended as a starting point to select material. Techni-pro recommends always testing our specific product with your application

Metal tweezer materials



More TECHNICAL information on our material TDS



MATERIAL DESCRIPTION	MAIN FEATURES & APPLICATIONS
CX Superalloy Anti-Acid, Anti-Magnetic (Superalloy Ni-Cr-Mo)	Fully non-magnetic - ◆ strength - ■ hardness - ◆ resistance to fatigue - ◆ shape retention - ■ corrosion resistance to most chemicals, salts and acids TYPICAL APPLICATIONS Non-magnetic tools for electronic and watch industry applications and for laboratory and medical applications in aggressive chemical environments
SA Anti-Acid, Anti-Magnetic Stainless Steel (AISI 316L)	Non-magnetic - ■ toughness - ■ corrosion resistance to most chemicals, salts and acids TYPICAL APPLICATIONS Tweezers for the electronic industry, watch-makers, jewelers and laboratory and medical applications in moderately aggressive chemical environments
S Stainless Steel (AISI 420)	Magnetic - ◆ strenght - ◆ hardness - ◆ resistance to corrosion TYPICAL APPLICATIONS Tweezers and cutting tools for the electronic industry, watch-makers, jewelers and laboratory and medical applications in mild aggressive chemical environments
C Carbon Steel (AISI 1060)	Magnetic - ◆ strenght - ◆ hardness - ● resistance to corrosion TYPICAL APPLICATIONS Tweezers and cutting tools for the electronic industry, watch-makers, jewelers applications
NC Superalloy Anti-Acid, Anti-Magnetic (Superalloy Ni-Cr-Mo)	Fully non-magnetic - ◆ strength - ■ hardness - ◆ resistance to fatigue - ◆ shape retention - ■ corrosion resistance to most chemicals, salts and acids TYPICAL APPLICATIONS Non-magnetic tools for electronic and watch industry applications and for laboratory and medical applications in aggressive chemical environments
TA Titanium (Nonferrous alloy, Grade 1)	Fully non-magnetic - ■ mechanical properties - ◆ ductility - ■ cold formability - ◆ corrosion resistance - ■ melting point (high temperature resistance) TYPICAL APPLICATIONS Handling of components in cleaning/chemical processes at high temperature, histology, biology, medicine, surgery. Used when high strength-to-weight ratio is required. Bio-compatible
N Nickel (Nonferrous alloy CuNi18Zn20)	Non-magnetic - soft and elastic - ■ cold workability (forming) - ◆ corrosion resistance by fresh water and steam - ◆ resistance to saltwater corrosion - ◆ resistance to alkalies and organic acids - ● resistance to inorganic acids TYPICAL APPLICATIONS Handling of scratch-sensitive parts in electronic, micro-mechanical and jewellery applications
BR Brass (Nonferrous alloy CuZn37)	Non-magnetic - ◆ cold workability (forming) - ◆ mechanical properties - ■ corrosion resistance - ◆ corrosion resistance by fresh water and steam TYPICAL APPLICATIONS Tweezers for handling scratch-sensitive mechanical parts, watch components, magnets

Coating tweezer materials

More TECHNICAL information on our material TDS







COATING DESCRIPTION	MAIN FEATURES & APPLICATIONS
High-tek Diamond coating	<p>ESD-safe material - ◆ hardness - ◆ wear resistance - ● friction coefficient - ◆ adherence to the tweezers - ◆ humidity resistant - ◆ chemical stability and corrosion resistance - ◆ 100% biological compatibility</p> <p>TYPICAL APPLICATIONS DLC tweezers are ideally suited for applications in medical, biological and clean room environments, as well as perfect for handling hard / abrasive materials.</p>
Engineering ESD epoxy coating (polyester + epoxy resins + conductive additives)	<p>ESD-safe material - ◆ general resistance - ◆ dispersion - ■ impact-resistant surface - ◆ elasticity - ■ functional permanent graffiti protection - ◆ cleanliness</p> <p>TYPICAL APPLICATIONS ESD tweezer coating for an enhanced operator comfort</p>
Industrial PTFE coating	<p>■ abrasion resistance - ■ toughness - ■ chemical corrosion resistance - ◆ cleanliness - ◆ heat resistance - ◆ cryogenic stability</p> <p>TYPICAL APPLICATIONS PTFE-coated tweezers are recommended when specimen material is fragile. It reduces the rate of heat during critical cryo work and reduces the corrosive action of acids and bases on tweezers tips. The PTFE coating also gives some protection of the metal when using with chemical compound.</p>
Engineering ESD foam grip (PVC foam)	<p>ESD-safe material - ◆ softness - ◆ flexibility - ◆ tear resistance - ■ abrasion/wear resistance - ■ chemical resistance</p> <p>TYPICAL APPLICATIONS ESD-safe handles, floor and work surface mats. ESD ergonomic tweezer cushion grips for an enhanced operator comfort. Ideal for repetitive handling tasks in specimen preparation, electronics, instrumentation, laboratories and forensics. Especially useful for handling ESD sensitive components or small static items</p>

Plastic tweezer materials





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MATERIAL DESCRIPTION	MAIN FEATURES & APPLICATIONS
 <p>CP High-performance plastic - Carbon PEEK (polyetheretherketone reinforced with carbon nano)</p>	<p>ESD safe material - hardness - rigidity - flexural strength - wear resistance - dimension stability - resistance to chemicals and aggressive agents - resistance to thermal ageing - heat capability</p> <p>TYPICAL APPLICATIONS Handling of components in cleaning/chemical/assembly processes at high temperature (soldering).</p>
 <p>CF Engineering plastic - Carbon fiber (PA66/CF30 polyamide 66 reinforced with 30 wt% carbon fibre)</p>	<p>ESD safe material - rigidity - tensile strength - flexural strength - fatigue resistance - creep resistance - wear and abrasion resistance - chemical resistance - heat capability</p> <p>TYPICAL APPLICATIONS Handling of sensitive components and devices in electronics assembly and lab applications. Clean room compatible.</p>
 <p>SV High performance plastic - PVDF (polyvinylidene fluoride carbon fibre reinforced)</p>	<p>ESD safe material - mechanical strength - toughness - abrasion resistant - high purity - chemical resistance - resistant to UV and nuclear radiation (sterilisation) - heat capability</p> <p>TYPICAL APPLICATIONS Handling of very scratch - and contamination - sensitive components, cleaning and etching processes. Clean room and medical device approved material.</p>
 <p>DG Engineering plastic - Delrin (POM/GF30 acetal resin reinforced with 30 wt% glass fibre)</p>	<p> tensile strength - flexural strength - fatigue resistance - creep resistance - wear resistance - abrasion resistance - hydrolytic resistance (hot water) - chemical resistance - insulating</p> <p>TYPICAL APPLICATIONS Handling of very scratch sensitive components (ceramic and glass devices, wafers, capillary)</p>

Ceramic tweezer materials



More TECHNICAL information on our material TDS

MATERIAL DESCRIPTION	MAIN FEATURES & APPLICATIONS
<p style="text-align: right;">SA + MZ</p>  <p>Advanced white ceramic (Zirconia Toughened Alumina)</p>	<ul style="list-style-type: none"> ◆ strength - ◆ hardness - no open porosity - ◆ hard surface - ◆ abrasion resistance - ◆ wear resistance - ◆ flexural strength - ◆ fracture toughness - ■ corrosion resistance - ◆ thermal properties - ◆ temperature stability - electrically insulating <p>TYPICAL APPLICATIONS Soldering processes, handling of components during thermal and chemical processes. Generally used when very rigid tips are required</p>
<p style="text-align: right;">SA + ZJ</p>  <p>ESD advanced black ceramic (Zirconia Toughened Alumina)</p>	<ul style="list-style-type: none"> ◆ ESD-safe material - ◆ strength - ◆ hardness - no open porosity - ◆ hard surface - ◆ abrasion resistance - ◆ wear resistance - ◆ flexural strength - ◆ fracture toughness - ■ corrosion resistance - ◆ thermal properties - ◆ temperature stability <p>TYPICAL APPLICATIONS Handling of EOS/ESD sensitive components, handling of components during thermal, chemical and soldering processes. Generally used when very rigid tips are required</p>