

SPECIALTY ALLOY GRADES FOR MEDICAL IMPLANTS

	CARPENTER ALLOY	PRODUCT DESCRIPTION	PRODUCT FORM				APPLICABLE SPECIFICATIONS	APPLICATIONS TO CONSIDER
			Bar, Round	Bar, Flat	Precision Strip	Wire		
Cobalt-Base Alloys	BioDur® Carpenter CCM® alloy	Co-28Cr-6Mo (Low Carbon)	Y	*	N	Y	ASTM F1537 (alloy 1), ISO 5832-12	joint replacement
	Micro-Melt® BioDur Carpenter CCM® alloy	Co-28Cr-6Mo (Low Carbon)	Y	*	N	Y	ASTM F1537 (alloy 1), ISO 5832-12	joint replacement, spinal rods
	BioDur CCM Plus® alloy	Co-28Cr-6Mo (High Carbon)	Y	*	N	N	ASTM F1537 (alloy 2), ISO 5832-12	joint replacement
	Conichrome	40Co-20Cr-16Fe-15Ni-7Mo	Y	*	*	Y	ASTM F1058, ISO 5832-7	joint replacement
	MP35N** alloy	35Co-35Ni-20Cr-10Mo	Y	*	*	Y	ASTM F562-Bar & Wire, ISO 5832-6	joint replacement, pacemaker leads, screws
	Carpenter L-605	Co-20Cr-15W-10Ni	Y	*	*	Y	ASTM F90	trauma and cardiovascular devices
Stainless Steels	BioDur 316LS	18Cr-14Ni-2.5Mo	Y	Y	Y	Y	ASTM F138-BAR, F138, F139, ISO 5832-1	joint replacement, spine and trauma devices
	BioDur 22Cr-13Ni-5Mn	22Cr-13Ni-5Mn-2.5Mo	Y	*	N	Y	ASTM F1314	trauma devices
	BioDur 734	21Cr-10Ni-3Mn-2.5Mo	Y	*	*	Y	ISO 5832-9, ASTM F1586	joint replacement
	BioDur 108	23Mn-21Cr-1Mo (Essentially Nickel-Free)	Y	*	*	Y	ASTM F2229	spine and trauma devices
Titanium Alloys	CP Titanium Grade 1		Y	Y	Y	Y	ASTM F67, ISO 5832-2	staples
	CP Titanium Grade 2		Y	Y	Y	Y	ASTM F67, ISO 5832-2	dental implants
	CP Titanium Grade 3		Y	Y	Y	Y	ASTM F67, ISO 5832-2	dental implants
	CP Titanium Grade 4		Y	Y	Y	Y	ASTM F67, ISO 5832-2	dental implants, plates, screws
	Ti 6Al-4V		Y	Y	Y	Y	ISO 5832-3, ASTM F 1472	joint replacement, spinal hardware, trauma devices
	Ti 6Al-4V ELI		Y	Y	Y	Y	ISO 5832-3, ASTM F 136	joint replacement, spinal hardware, trauma devices
	Ti 6Al-7Nb		Y	Y	Y	Y	ASTM F1295, ISO 5832-11	joint replacement, spinal hardware, trauma devices
	Ti 15Mo		Y	Y	Y	Y	ASTM F2066	various medical, various dental
Ti 3Al-2.5V		Y	Y	Y	Y	ASTM B348 Grade 9	trauma devices	

\*\*MP and MP35N are registered trademarks of SPS Technologies, Inc.

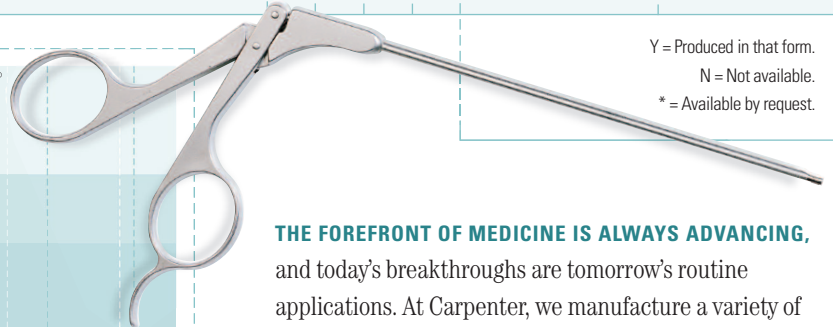
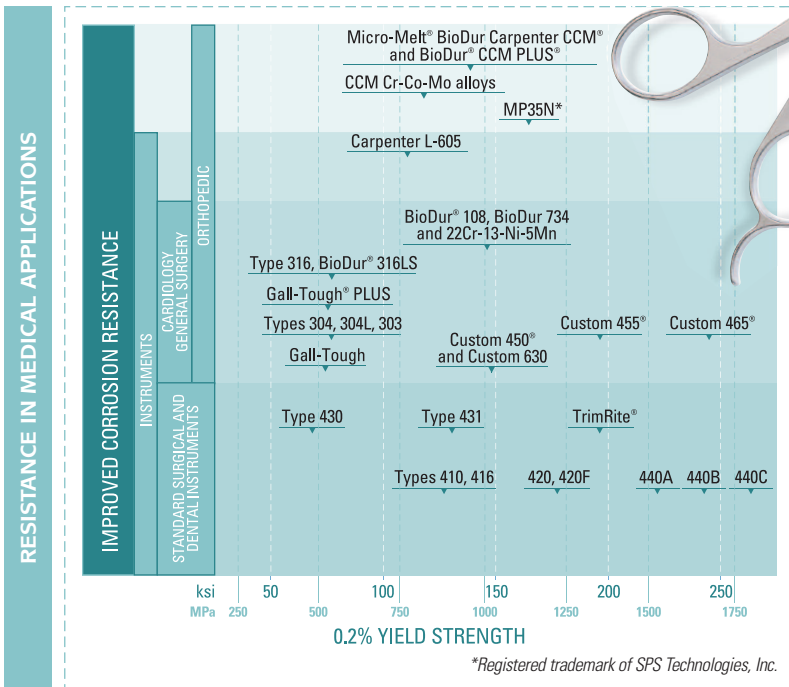
Y = Produced in that form.  
 N = Not available.  
 \* = Available by request.

**CARPENTER TECHNOLOGY CORPORATION (NYSE:CRS)** manufactures a wide range of specialty alloys and engineered materials as well as engineered components machined from metallic materials. Around the world, Carpenter materials are renowned for their quality, reliability and extraordinary value in many performance-critical applications. And every product, every alloy, is backed by more than a century of industry and technology leadership, world-class manufacturing, rigorous quality control and global distribution. Whatever your application, count on Carpenter to leverage our deep technical expertise and extensive materials experience to deliver high-quality engineered materials.

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<b>SPECIALTY ALLOY GRADES FOR MEDICAL INSTRUMENTS</b>	<b>INSTRUMENT</b> Stainless Steels	Project 70+® Custom 630	X5CrNiCuNb16-4 or X5CrNiCuNb17-4-4	Y	Y	Y	Y	ASTM F899	instruments
		Custom 455® stainless	X5CrNiCuTiNb12-8	Y	*	Y	Y	ASTM F899	instruments
		Custom 465® stainless	X1CrNiTiMo11-11	Y	*	Y	Y	ASTM F899	instruments
		Custom 475® stainless	X1CrCoNiMoAl11-9-8-5-1	*	*	Y	Y	TBD	instruments
		Project 70+ Type 416	X12CrS13	Y	N	N	N	ASTM F899	instruments
		420 stainless	X20Cr13	Y	Y	Y	Y	ASTM F899	instruments
		440A stainless	X70CrMo15	Y	*	Y	N	ASTM F899	instruments
		440C stainless	X105CrMo17	Y	N	Y	Y	ASTM F899	instruments
		TrimRite® stainless	X23CrMoNi14	Y	N	*	Y	ASTM F899	instruments
		Trinamet® stainless	X15CrCuMo13-3-2	Y	*	Y	Y	TBD	instruments
<b>BLADES</b> Stainless	Carpenter CTS™ 20	X20Cr13	N	N	Y	N	ASTM F899	blades	
	Carpenter CTS 40A	X70CrMo15	N	N	Y	N	ASTM F899	blades	
	Carpenter CTS 40C	X105CrMo17	N	N	Y	N	ASTM F899	blades	
	Carpenter CTS BD1	X90CrMo16	N	N	Y	N	ASTM F899	blades	
	Carpenter CTS TMT	X15CrCuMo13-3-2	N	N	Y	N	ASTM F899	blades	

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