DATA SHEET

LATROBE SPECIALTY STEEL COMPANY

Latrobe, PA 15650-0031 USA

Issue 1

Blade Steels

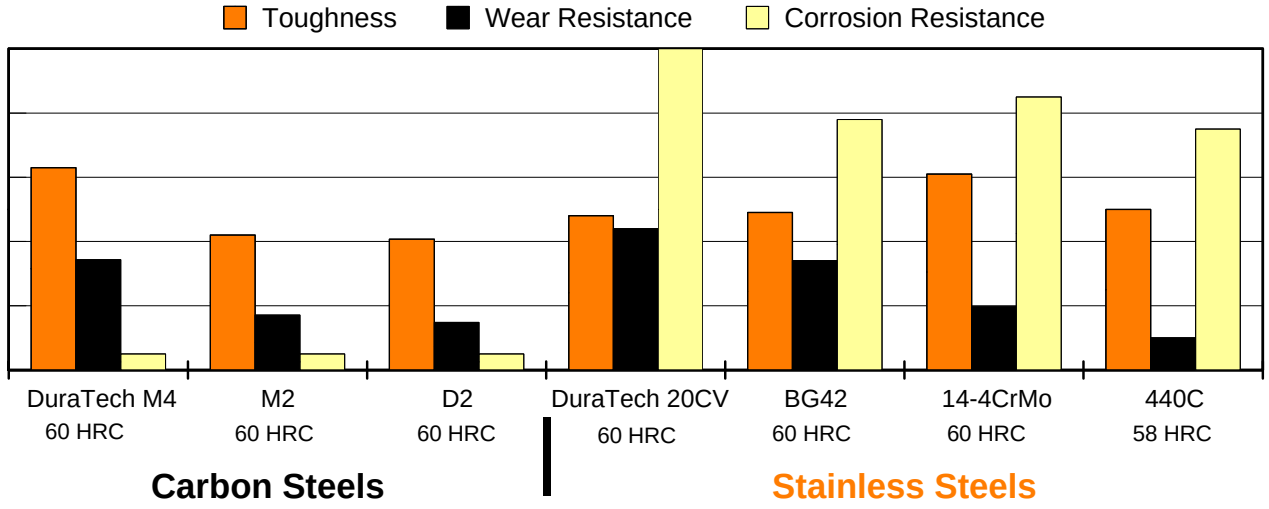
Latrobe Specialty Steel offers a variety of specialized tool steels that are produced in sheet form for the manufacture of industrial knives, military knives, sporting knives, and specialized custom knives. This broad family of knife steels, from carbon steels to stainless steels, provides a wide selection of properties to meet any knife making requirement.

An important characteristic of knife steels is wear resistance, which translates into retention of a sharp cutting edge. Three metallurgical factors affect edge retention. First, the higher the heat-treated hardness, the better the edge retention. Second, different types of alloy carbides have different hardnesses, and affect the wear resistance. Chromium carbides are approximately 72 Rockwell C, and vanadium carbides are approximately 85 Rockwell C. Thus, steels that contain vanadium carbides typically exhibit better wear resistance than steels that contain primarily chromium carbides. Finally, a higher volume percentage of carbides in the steel provides better wear resistance than a lower carbide volume percentage.

A comparison of selected properties is presented in the bar graph below. Summaries of heat treatment requirements for each grade follow. For more detailed heat treatment instructions, see the Latrobe Specialty Steel Technical Bulletin “Tech Topics 102” as well as the individual data sheets for each grade of steel, which may be obtained at www.latrobesteel.com.

Grade	C	Cr	Mo	W	V
DuraTech™ M4	1.45	4.50	5.20	5.50	3.85
M2	0.86	4.00	4.85	6.15	1.84
LSS™ D2	1.55	11.3	0.90	-	0.85
DuraTech™ 20CV	1.90	20.00	1.00	0.60	4.00
BG42®	1.15	14.50	4.00	-	1.20
14-4CrMo	1.05	14.00	4.00	-	-
440C	1.00	17.00	0.50	-	-

Relative Properties



Blade Steels
HEAT TREATMENT SUMMARIES

(See Tech-Topics Bulletin 102 and individual grade data sheets for complete heat treatment details.)

DuraTech™ M4	
Austenitize :	1875-2125°F (1023-1163°C)
Quench:	Pressurized gas, Oil, or Salt
Oil quenched from 2000°F (1093°C) and Tempered[1]:	
1000°F (538°C)	61.5 HRC
1050°F (566°C)	60 HRC
1100°F (593°C)	57 HRC
1150°F (621°C)	54 HRC

M2	
Austenitize :	1975-2175°F (1080-1191°C)
Quench:	Air, Pressurized gas, Oil, or Salt
Oil quenched from 1975°F (1080°C) and Tempered[1]:	
1000°F (538°C)	62 HRC
1050°F (566°C)	60.5 HRC
1100°F (593°C)	58 HRC
1150°F (621°C)	56 HRC

LSS™ D2	
Austenitize :	1850-1900°F (1010-1038°C)
Quench:	Air or Pressurized gas
Air Cooled from 1875°F (1024°C) and Tempered[1]:	
300°F (149°C)	63 HRC
400°F (204°C)	62 HRC
500°F (260°C)	60 HRC
550°F (288°C)	58 HRC

[1] For tempering temperatures over 900°F (482°C), double tempering is required. Tempering the stainless grades between 800-1100°F (427-583°C) will result in reductions in impact toughness and corrosion resistance.

[2] Optional cryogenic treatments at -100°F (-73°C) may be used to increase the resultant tempered hardness by about 2 Rockwell C points.

DuraTech™ 20CV	
Austenitize :	1950-2150°F (1066-1177°C)
Quench[2]:	Pressurized gas, Oil or Salt
Oil quenched from 2100°F (1149°C) and Tempered[1]:	
400°F (204°C)	61 HRC
450°F (260°C)	60 HRC
500°F (316°C)	59.5 HRC
600°F (371°C)	59 HRC

BG42®	
Austenitize :	2050°F (1121°C)
Quench[2]:	Oil
Oil quenched from 2050°F (1121°C) and Tempered[1]:	
975°F (524°C)	60 HRC
1000°F (538°C)	58 HRC
1025°F (552°C)	56 HRC

14-4CrMo	
Austenitize :	1900-2000°F (1038-1093°C)
Quench[2] :	Air, Pressurized gas, or Oil
Oil quenched from 1975°F (1080°C) and Tempered[1]:	
350°F (177°C)	62 HRC
400°F (204°C)	61 HRC
450°F (260°C)	60 HRC
500°F (316°C)	59 HRC
600°F (371°C)	57 HRC

440C	
Austenitize :	1850-1900°F (1010-1038°C)
Quench:	Air, Pressurized gas, or Oil
Oil quenched from 1875°F (1024°C) and Tempered[1]:	
440C 212°F (100°C)	59 HRC
440C 300°F (149°C)	58 HRC
440C 400°F (204°C)	57 HRC
440C 500°F (316°C)	55 HRC
440C 600°F (371°C)	54 HRC

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The data presented herein are typical values, and do not warrant suitability for any specific application or use of this material. Normal variations in the chemical composition, the size of the product, and heat treatment parameters may result in different values for the various physical and mechanical properties.

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