

# Modentic Valves

## SUPER ALLOY SERIES



The typical Austenitic Stainless Steel – 18%Cr + 10% Ni have been adopted in corrosion resistant application for decades. In accordance with more and more application, the typical Austenitic stainless steel is not capable for more severe environment. More and stronger corrosion resistant ability by manifesting the feature of various element, are demanded by the market. With wider sources of castings and bar material, Modentic decide to involve more in this field. And now, **Ball valves in material Alloy 20, Hastelloy, Monel & Duplex, end connection of ANSI 150#RF flanged and threaded, size from 1/2" to 6" are available ex-stock from our warehouse. Customized products machined from bar are also welcomed.**

Material Code	Elements Content (%)	Casting		
		ASTM	DIN	UNS
<b>Austenitic Stainless Steel</b>				
<b>General</b>				
SS304	19Cr-9Ni	CF8	1.4308	J92600
SS304L	19Cr-9Ni-C<0.03%	CF3	1.4306	J92500
SS347	19Cr-10Ni-Nb	CF8C	1.4552	J92710
<b>Specific</b>				
SS316	19Cr-10Ni-2.5Mo	CF8M	1.4408	J92900
SS316L	19Cr-10Ni-2.5Mo-C<0.03%	CF3M	1.4404	J92800
SS317	19Cr-11Ni-3.5Mo	CG8M	1.4437	J93000
SS317L	19Cr-11Ni-3.5Mo-C<0.03%	CG3M	1.4438	J92999
<b>Super Austenitic Stainless Steel</b>				
904L	21Cr-25Ni-4.5Mo-1.5Cu-N	-	1.4539	-
254 SMO	20Cr-18Ni-6.5Mo-Cu-N	A351 CK3MCuN	1.4547	J93254
<b>Highly Corrosion-resistant Alloy</b>				
<b>Austenitic Stainless Steel ( Iron base )</b>				
Alloy 20	29Ni-20Cr-3.5Cu-2.5Mo	A351 CN7M	2.4660	J95150
<b>Ni-Mo Alloy</b>				
Hastelloy B	28Mo-5Fe-V	A494 N-12MV	2.4882	N30012
Hastelloy B2	28Mo-1Fe	A494 N-7M	2.4617	N30007
<b>Ni-Cr-Mo Alloy</b>				
Hastelloy C276	16Cr-17Mo-6Fe-4W-V	A494 CW12MW	2.4686	N30002
Hastelloy C22	21Cr-13.5Mo-4Fe-3W	A494 CX2MW	2.4602	N26022
<b>Ni-Cu Alloy</b>				
Monel 400	65Ni-32Cu	A494 M-35-1	2.4365	N24135
<b>Nickel</b>				
Nickel CZ100	97Ni	A494 CZ-100	2.4066	N02100
<b>Titanium</b>				
Grade 2	99Ti	B367 C2		
Grade 5	6Al-4V	B367 C5		
<b>High Temperature Alloy ( Nickel base )</b>				
Inconel 600	15Cr-8Fe	A494 CY-40	2.4816	N06040
inconel 625	22Cr-9Mo-3.5Nb-2.5Fe	A494 CW6MC	2.4856	N26625
<b>Duplex Stainless Steel</b>				
1A	25Cr-5Ni-2Mo-3Cu	A890 Gr.1A CD4MCu	1.4517	J93370
1B	25Cr-5Ni-2Mo-3Cu-N	A890 Gr.1B CD4MCuN		J93372
2A	24Cr-10Ni-3.5Mo-N	A955 Gr.2A CE8MN		J93345
2205/4A	22Cr-5Ni-3Mo-N	A955 Gr.4A CD3MN	1.4470	J92205
<b>Super Duplex Stainless Steel</b>				
2507/5A	25Cr-7Ni-4Mo-N	A890 Gr.5A CE3MN	1.4469	J93404
Z100/6A	25Cr-7Ni-3.5Mo-Cu-N-W	A890 Gr.6A CD3MWCuN	1.4471	J93380
329	25Cr-4Ni-Mo		1.4460	

## Effect of Major Alloying Elements

### CHROMIUM

A stainless steel contains a minimum of 10.5% chromium because this level of chromium causes the spontaneous formation of a stable, transparent, passive, protective film. Increasing the level of chromium enhances corrosion resistance. At elevated temperatures, chromium provides resistance to oxidation and sulfur-containing and other corrosive atmospheres; contributes to high temperature creep and rupture strength; and, in some alloys, increases resistance to carburization.

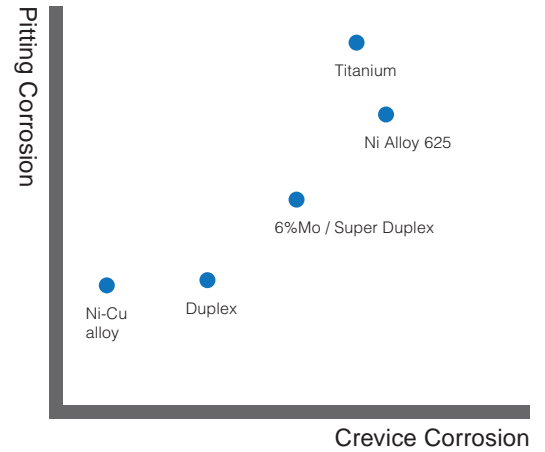
### NICKEL

Nickel in stainless steels promotes the stability of austenite. Austenite is stronger and more stable at higher temperatures than ferrite. Less nickel is needed to retain an austenitic structure as the nitrogen or carbon levels increase. When sufficient nickel is added to a chromium stainless steel, the structure changes from ferritic to austenitic. Adding nickel improves toughness, ductility, and weldability. Nickel increases resistance to oxidation, carburization, nitriding, thermal fatigue, and strong acids, particularly reducing acids. It is an important alloying element in stainless steel and nickel-base alloys used for corrosive and high temperature applications.

### MOLYBDENUM

Molybdenum additions improve resistance to pitting and crevice corrosion in chloride-containing environments and corrosion by sulfuric, phosphoric, and hydrochloric acids. The elevated temperature mechanical properties of austenitic stainless steels and the strength and tempering resistance of martensitic stainless steels are improved by molybdenum.

## Comparative Corrosion Performance



Material Code	Typical Application
<b>Austenitic Stainless Steel</b>	
<b>General</b>	
SS304	Pulp and paper mills, Industrial water pipe and, and oil pipelines.
SS304L	
SS347	
<b>Specific</b>	
SS316	Food and biotechnology, seawater service, fertilizers processes textile and dyeing service, Industry wastewater reclamation.
SS316L	
SS317	
SS317L	
<b>Super Austenitic Stainless Steel</b>	
904L	Chemical and pharmaceutical industries, flue gas desulfurization, acid and alkali reactor, salt manufacturing processes and seawater desalination, chemical processes for highly concentrated chloride.
254 SMO	
<b>Highly Corrosion-resistant Alloy</b>	
<b>Austenitic Stainless Steel ( Iron base )</b>	
Alloy 20	Sulfuric acid, acetic acid, phosphoric acid, nitrate acid, dilute hydrochloric acid, dilute hydrofluoric acid, and dilute alkali.
<b>Ni-Mo Alloy</b>	
Hastelloy B	Corrosion resistant processes handling chlorine, sulfuric acid, phosphoric acid, acetic acid and hydrogen chloride gas, also for processes handling chloride with high concentration at high temperature. (max. temp 60°C)
Hastelloy B2	
<b>Ni-Cr-Mo Alloy</b>	
Hastelloy C276	Processes handling oxidizing acid, formic acid, dilute sodium hydroxide, acetic anhydride, also for chemical processes handling fluoride. (max. temp 60°C)
Hastelloy C22	
<b>Ni-Cu Alloy</b>	
Monel 400	Harsh corrosive chemicals processes, hydrofluoric acid, caustic soda, potash liquor, and sulfuric acid. (max. temp 100°C)
<b>Nickel</b>	
Nickel CZ100	Corrosion resistant from many kinds of alkali, especially caustic soda.
<b>Titanium</b>	
Grade 2	Chemical and pharmaceutical industries, medical and biotechnology, seawater service, corrosion resistant from most kinds of acid and alkali, but could be not used in hydrofluoric acid (HF).
Grade 5	
<b>High Temperature Alloy ( Nickel base )</b>	
Inconel 600	Combustion chambers · heat-treating equipment · chemical and petrochemical applications, phenol condensers, soap manufacture, vegetable and fatty acid vessels and many more. (high tensile at 800°C)
inconel 625	
<b>Duplex Stainless Steel</b>	
1A	Corrosion resistance and tensile than CF3M, food and biotechnology ,seawater service, fertilizers processes textile and dyeing service, Industry wastewater reclamation, also for dilute sulfuric acid, dilute phosphoric acid, dilute formic acid, dilute acetic acid. (Tensile >650MPa)
1B	
2A	
2205/4A	
2205/4A	
<b>Super Duplex Stainless Steel</b>	
2507/5A	Corrosion resistance and tensile than CF3M, food and biotechnology ,seawater service, fertilizers processes textile and dyeing service, Industry wastewater reclamation, also for dilute sulfuric acid, dilute phosphoric acid, dilute formic acid, dilute acetic acid. (Tensile >650MPa)
Z100/6A	
329	

**1. V-006**



**2. V-255**



**3. V-356**



**4. MD-82**



**5. MD-51**



**6. V-S06**



**7. V-M05**



Super Alloy Valves  
**CASTING**

**1. V-006**

2 PIECES, Full Port, Threaded End  
PRESSURE: 1000 psi  
SIZE: 1/2" ~ 2"

**2. V-255**

3 PIECES, Full / Reduced Port  
Threaded / Socket / Butt Weld End  
PRESSURE: 2000 / 1500 psi  
SIZE: 1/2" ~ 2"  
OPTION: API607 Fire Safe Approved

**3. V-356**

3 PIECES, Full Port  
Threaded / Socket / Butt Weld End  
PRESSURE: 2000 psi  
SIZE: 1/4" ~ 2"

**4. MD-82**

2 PIECES, Full Port, Flanged End  
ANSI Class 150 / 300 / PN16 / PN40  
SIZE: 1/2" ~ 12"  
OPTION: API607 Fire Safe Approved

**5. MD-51**

1 PIECE, Reduced Port, Flanged End  
ANSI Class 150 / 300  
SIZE: 1" ~ 6"  
OPTION: API607 Fire Safe Approved

Super Alloy Valves  
**BAR**

**6. V-S06**

2 PIECES, Full Port  
Threaded End  
PRESSURE: 1000 psi  
SIZE: 1/4" ~ 2"

**7. V-M05**

3 PIECES, Full Port  
Threaded / Socket / Butt Weld End  
PRESSURE: 1000 psi  
SIZE: 1/4" ~ 2"

**1. Gate Valve  
GTF**



**2. Globe Valve  
GBF**



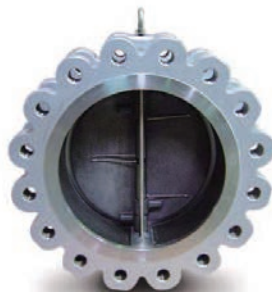
**3. Check Valve  
SF**



**4. MV-1220  
Wafer Type**



**5. MV-1221  
Lug Type**



**6. NV-0060  
NV-0061**



Super Alloy Valves

**API600 / API603 Design**  
**Gate • Globe • Check Valves**

**1. GTF - Gate Valve**

ANSI Class 150 / 300 / 600  
SIZE: 2" ~ 24"

**2. GBF - Globe Valve**

ANSI Class 150 / 300 / 600  
SIZE: 2" ~ 24"

**3. SF - Check Valve**

ANSI Class 150 / 300 / 600  
SIZE: 2" ~ 24"

Super Alloy Valves

**API594 / API6D Design**  
**Dual Plate Check Valves**

**4. MV-1220 Wafer Type**

ANSI Class 150 / 300 / JIS10K / PN16 / PN40  
SEAT: NBR / EPDM / Viton / Metal  
SIZE: 1-1/2" ~ 60"

**5. MV-1221 Lug Type**

ANSI Class 150 / 300 / PN16 / PN40  
SEAT: NBR / EPDM / Viton / Metal  
SIZE: 2" ~ 20"

**6. Needle Valve (from bar)**

NV-0060 Female x Female  
NV-0061 Male x Female  
CWP: 6000 psi  
SIZE: 1/4" ~ 2"