ALLOY DATA SHEET

Safe Metal
L'esprit industriel

G30MnV6

Visit our website
www.safe-metal.com

WHO ARE WE ?

Safe Metal is the world leader in steel components made by green sand casting. Our teams operate as part of an international network that stretches across Europe, America and Asia, and partner their sales and project management skills with those of their customers.

MAKING WORLD CLASS

Thanks to the expert skills of our R&D department, we are able to improve our industry knowledge and hence our products, our production process and metalworking by choosing the most appropriate methods for the product

+ (33) 4 69 84 23 96 | www.safe-metal.com

G30MnV6

Generality

Medium alloyed vanadium steel for high mechanical characterisctics at treated condition and wear resistance. Good hardenability and medium weldability.

Market : this alloy can be used in all markets.

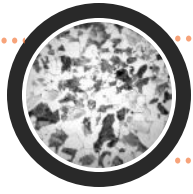
Chemical Composition

C (%)	Si (%)	Mn (%)	P (%)	S (%)	Cr (%)	Mo (%)	V (%)
0,26 – 0,33	0,15 - 0,60	1,2– 1,6	< 0,025	0,02 - 0,06	<0,3	<0,08	0,08-0,2

Main characteristics

G30MnV6

Family : Versatile



- Weldability
- Machining
- Impact test values
- Cost
- Mechanical resistance

Safe Metal - 2 place de Francfort - 69003 Lyon - France
+33 4 69 84 23 96 - contact@safe-metal.com
www.safe-metal.com

G30MnV6

Mechanical characteristics & Heat treatment

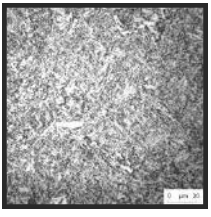
	Designation		Heat Treatment			Thickness	Mechanical properties				
							Tensile test at room temperature			Impact test	
Reference	Name	Number	Symbol	Normalizing or austenitizing °C	Tempering °C	t mm	$Rp_{0.2}$ MPa min.	R_m Mpa min.	A% min.	KV J min.	Temp. °C
Safe Metal possibilities according to norms :											
EN 10293:2015	G28Mn6	1.1165	+N	880 to 950		t ≤ 250	260	520 to 670	18	27	RT
			+QT1	880 to 950	630 to 680	t ≤ 100	450	600 to 750	14	35	RT
			+QT2	880 to 950	580 to 630	t ≤ 50	550	700 to 850	10	31	RT
Safe Metal other possibilities :											
Safe Metal	G30MnV6		+N			t ≤ 30	400	640	12	29	-20
Safe Metal	G30MnV6		+QT HR		High Rm	t ≤ 30	750 to 830	880 to 950	6	25	-20
Safe Metal	G30MnV6		+QT M		Balanced Rm/Kv	t ≤ 30	550 to 750	800 to 880	10	25	-20
Safe Metal	G30MnV6		+QT HD		High Kv	t ≤ 30	400 to 550	700 to 800	12	40	-20

RT : Room temperature HR : High resistance N : Normalized
QT : Liquid quenched and tempered HD : High ductility

Microstructures

QUENCHING + TEMPERED AT 500°C

QUENCHING + TEMPERED AT 600°C



NORMALIZED

Machining

			HB*	Microstucture
Safe Metal	G30MnV6	N	175	Ferrite + Pearlite
Safe Metal	G30MnV6	QT HR	295	Tempered Martensite
Safe Metal	G30MnV6	QT M	255	Tempered Martensite
Safe Metal	G30MnV6	QT HD	200	Tempered Martensite

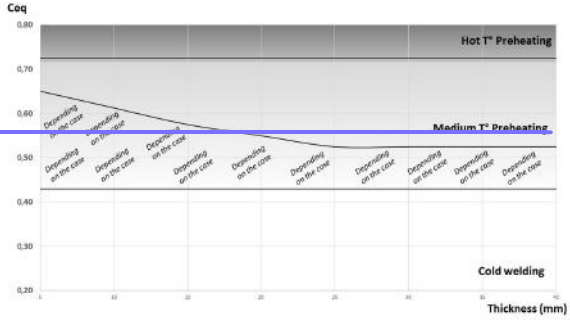
HB : Brinell hardness

Safe Metal - 2 place de Francfort - 69003 Lyon - France
+33 4 69 84 23 96 - contact@safe-metal.com
www.safe-metal.com

G30MnV6

Welding

Preheating conditions according to thickness and equivalent carbon. A specific zone is defined where preheating is not absolutely necessary and depends on the case.



G30MnV6

Welding comparative table

Grade	Group (ISO TR 15608)	Filler Metal	Post-Welding HT	Hardness of melted area (Hv10)	Rm (MPa)	Process (acc. NFEN ISO 15614)
C steel						
C25	1.2	E71T5	SR/N	130-170	450-550	111/135
		E71T5	QT	150-200	550-650	
G20Mn5	1.2	E70C6 M H4	SR/N	150-200	500-600	
		E70C6 M H4	QT	160-220	540-580	
G24Mn6	3.1	ER110T5	SR	240-300	750-800	
		ER110T5	QT	260-340	780-860	
G28Mn6	3.1	ER80SD2	SD			
G30MnV6	3.1	ER80SD2	SD			
GE230	1.1	E71T5	SR/N	130-170	450-550	
		E71T5	QT	150-200	550-650	
GE280	1.2	E70C6 M H4	SR/N	150-200	500-600	
		E70C6 M H4	QT	160-220	540-580	
G20MnV6	3.1	ER110T5	SR	240-300	750-800	
		ER110T5	QT	260-340	780-860	
Cr-Mo						
G18CrMo4	5.1	E9018B3	SR	160-250	620-680	111/135
G20CrMo4	5.1	E9018G	QT	200-260	630-720	111/135
G30CrMo4	5.1	E12018G	QT	300-350	950-1100	111
G21CrMoV5-11	6.2	E13018G	SR	260-350	800-1000	111
Others						
G10NiMoV6	3.1	ER90 S-G	SR	200-280	620-660	135
		ER90 S-G	QT	160-220	580-640	
G20NiCrMo4	4.2	ER120 S-G	SR	300-360	900-960	
		ER120 S-G	QT	280-360	920-1020	

111 : Electrode welding
135 : MAG

SR : Stress relieaving
QT : Quenched and Tempered

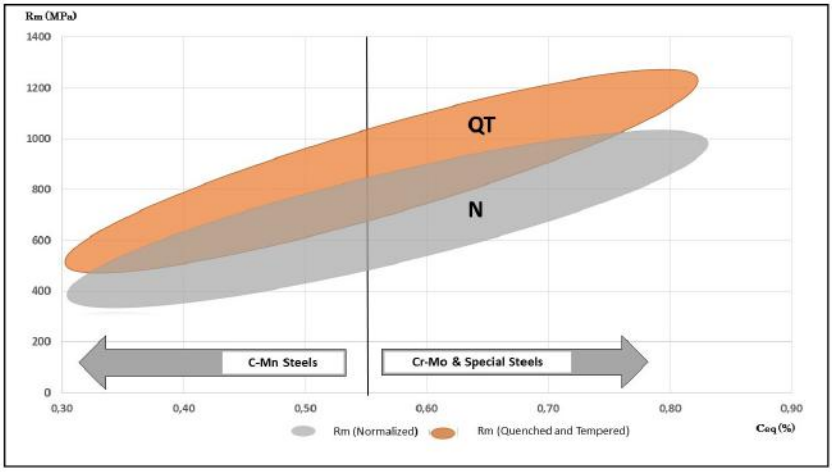
N : Normalized

Safe Metal - 2 place de Francfort - 69003 Lyon - France
+33 4 69 84 23 96 - contact@safe-metal.com
www.safe-metal.com

G30MnV6

Comparative Table of Safe Metal grades

	Chemical composition								N			QT (Q920°C)		
C-Mn	C (%)	Mn (%)	Si (%)	Cr (%)	Mo (%)	V (%)	Ni (%)	Ceq (%)	Rm	A%	Kv (-20°C)	Rm	A%	Kv (-20°C)
C25	0,2	0,7	0,45					0,32	440	25	22	420-520	20-25	40-50
GE240	0,23	0,9	0,5					0,4	480	25	12	520-600	25-30	oct-20
GE280	0,24	1,2	0,5	0,15				0,47	530	20	10	600-800	15-25	20-40
G20Mn5 (low)	0,2	1,1	0,4					0,38	470	28	40	500-590	20-22	38-46
G20Mn5 (high)	0,23	1,4	0,5					0,5				600-880	déc-25	25-30
G20MnV6	0,23	1,55	0,5			0,05		0,54	580	25	10			
G24Mn6 (low)	0,23	1,65	0,5					0,52	590	18	10	550-670	20-25	40-75
G24Mn6 (high)	0,25	1,8	0,5					0,6	630	32	10	620-900	oct-25	15-35
G28Mn6	0,3	1,4	0,5					0,53	650	17	10	650-840	oct-15	30-60
G30MnV6	0,3	1,4	0,5			0,1		0,55	650	12	30	700-950	08-déc	30-45
	Chemical composition								N			QT (Q920°C)		
Cr-Mo	C (%)	Mn (%)	Si (%)	Cr (%)	Mo (%)	V (%)	Ni (%)	Céqu (%)	Rm	A%	Kv (-20°C)	Rm	A%	Kv (-20°C)
G18CrMo4	0,18	0,8	0,4	1	0,2			0,55	450	18	10	560-720	déc-22	30-80
G25CrMo4	0,25	0,8	0,4	1	0,2			0,62	660	11	12	600-950	oct-18	20-90
G30CrMo4	0,3	0,8	0,4	1	0,2			0,67	840	5	10	650-1050	oct-18	20-90
G21CrMoV5-11	0,2	0,7	0,5	1,15	1	0,3		0,82	980	5	5	900-1200	05-oct	5
	Chemical composition								N			QT (Q920°C)		
Others	C (%)	Mn (%)	Si (%)	Cr (%)	Mo (%)	V (%)	Ni (%)	Céqu (%)	Rm	A%	Kv (-20°C)	Rm	A%	Kv (-20°C)
G10MnMoV6	0,12	1,35	0,5		0,3	0,08		0,42	460	17	10	580-750	14-16	20-50
G20NiMoCr4	0,18	1	0,4	0,4	0,6		0,9	0,62	750	5	10	600-950	déc-20	35-100



Safe Metal - 2 place de Francfort - 69003 Lyon - France
+33 4 69 84 23 96 - contact@safe-metal.com
www.safe-metal.com

C25

Family : Versatile

GE240

Family : Versatile

GE280

Family : Versatile

G20Mn5

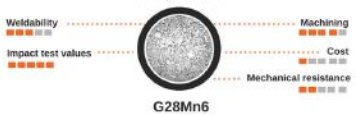
Family : Versatile

G20MnV6

Family : Versatile

G24Mn6

Family : Versatile



G28Mn6

Family : Versatile

G30MnV6

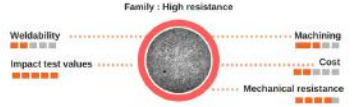
Family : Versatile

G18CrMo4

Family : High resistance

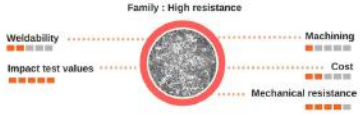
G25CrMo4

Family : High resistance



G30CrMo4

Family : High resistance



G21CrMoV5-11

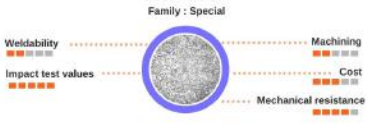
Family : High resistance

G10MnMoV6

Family : Special

G20NiMoCr4

Family : Special



GS400-18 LT

Family : Cast iron

Safe Metal - 2 place de Francfort - 69003 Lyon - France
+33 4 69 84 23 96 - contact@safe-metal.com
www.safe-metal.com

Safe Metal
L'esprit industriel

Learn more about us on our website :

www.safe-metal.com

Or contact us :

+ (33) 4 69 84 23 96

contact@safe-metal.com

+ (33) 4 69 84 23 99

2 Place de Francfort
69003 Lyon - France