

Master alloys for titanium alloys based on molybdenum, vanadium, niobium

Denomination of the master alloys	Grade	mass fraction, % max																	Granulometric of Size	
		Mo	V	Al	Cr	Zr	Ti	Fe	Cu	N	O	C	S	P	Si	Mn	W	Nb	Size of particles, mm	Screen Analysis, %
Vanadium-Aluminum-Molybdenum-Titanium-Chromium	V-Al-Mo-Ti-Cr	25-27	25-27	**	14-16	-	9-11	0.50	0.20	0.08	0.20	0.10	-	0,01	0.25	0.04	-	-	≤ 10,0 0,9-0,2 < 0,2	100% 6% max 1% max
Aluminum- Molybdenum	Al-Mo	45-55	-	54-44	-	-	-	0.50	-	0.06	0.05	0.03	-	-	0,30	-	-	-	> 5,0 < 1,0	10% max 5% max
Vanadium-Aluminum-Molybdenum -Titanium	V-Al-Mo-Ti	35-38	30-34	≤16.5	-	-	**	0.80	0.20	-	-	-	-	-	0.50	-	-	-	> 10,0 10,0-0,5 < 0,5	10% max balance 5% max
Aluminum- Molybdenum - Zirconium-Silicon	Mo-Al-Zr-Si	36-42	-	**	-	17-22	-	0.50	0.20	0.05	0.15	-	-	-	1.5-4.0	0.04	-	-	> 25,0 25,0-0,5 < 0,5	10% max balance 5% max
Vanadium-Aluminum-Molybdenum -Chromium-Iron	V-Al-Mo-Cr-Fe	31-35	31-35	**	5-8	-	-	5-8	0.20	0.08	0.20	0.10	-	-	0.35	0.04	-	-	> 10,0 10,0-0,5 < 0,5	10% max balance 5% max
Aluminum- Molybdenum - Titanium	Al-Mo-Ti	48-52	-	**	0.30	-	6-9	0.60	0.12	0.05	0.15	-	0.01	0.01	0.50	0.03	-	-	≤ 10,0 < 0,5	100% 5% max
Aluminum- Molybdenum - Chromium-Silicon	Al-Mo-Cr-Si	30-36	-	**	20-27	-	-	3-7	0.12	0.10	0.15	-	0.01	0.01	2.5-5.5	0.03	-	-	> 25,0 25,0-0,5 < 0,5	10% max balance 5% max
Vanadium- Chromium-Molybdenum - Aluminum	V-Cr-Mo-Al	18-22	33-37	6-10	34-38	-	-	0.70	-	0.06	0.10	0.10	-	-	0.35	-	-	-	25,0-0	100%
		15-19	28-32	8-12	40-46	-	-	0.70	-	0.06	0.10	0.10	-	-	0.35	-	-	-	25,0-0	100%
Aluminum- Molybdenum - Tungsten- Titanium	Al-Mo-W-Ti	32-38	-	**	-	-	6-10	0.50	0.12	0.05	0.15	-	0.01	0.01	0.50	0.03	10-18	-	15,0-0,5 < 0,5	100% 5% max
Aluminum- Molybdenum - Zirconium	Al-Mo-Zr	41-45	-	**	-	23-26	-	0.40	0.20	0.03	0.12	-	-	-	0.50	-	-	-	> 25,0 25,0-0,5 < 0,5	10% max balance 5% max
Vanadium-Aluminum-Molybdenum - Titanium - Carbon	V-Al-Mo-Ti-C	10 - 20	30-45	14-50	-	-	**	0.80	0.20	0.10	0.35	2.3-4.5	0.03	0.03	0.5	-	-	-	> 25,0 25,0-0,5 < 0,5	10% max balance 5% max
Aluminum- Molybdenum - Niobium-Titanium- Carbon	Al-Mo-Nb-Ti-C	30-40	-	**	-	-	15-25	0.70	-	-	-	2-4	0.03	0.03	0.70	-	-	14-20	> 25,0 25,0-0,5 < 0,5	10% max balance 5% max

** - balance

Denomination of the master alloys	Grade	mass fraction, % max, % max																				Granulometric of Size		
		Nb	Al	Ta	Fe	Zr	Mo	W	Si	S	P	C	N	O	Cu	Cr	B	Co	Mn	Ni	V	Y	Size of particles, mm	Screen Analysis, %
Aluminum- Niobium-Silicon	Al-Nb-Si	65-75	balance	0.20	0.40	0.20	0.10	0.10	0.1-0.5	0.02	0.03	0.05	0.06	0.10	0.20	0.10	-	-	-	-	-	-	> 25,0 25,0-0,5 < 0,5	10% max balance 5% max
Aluminum- Niobium-Tantalum	Al-Nb-Ta	50-60	balance	8-12	0.40	-	-	-	-	-	-	0.05	0.06	0.10	-	-	-	-	-	-	-	-	10,0-0	100%
Niobium -Aluminum	Nb-Al	58-62	38-42	0.20	0.20	-	0.01	0.01	0.10	-	-	0.02	0.04	0.10	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.01	10,0-0	100%
		65-75	25-35	0.20	0.40	0.20	0.10	0.10	0.10	0.10	0.02	0.03	0.05	0.06	0.10	0.20	0.10	-	-	-	-	-	-	10,0-0

** - balance

Note: content of impurities and granulometric of Size can be changed in coordination with the Customer