

### Manufacturing

TiAl TNM®-B1 forging stocks are manufactured by VAR skull melting and centrifugal casting in permanent molds based on a double VAR melted consumable electrode. Consumable electrodes (ingots) are made up of compacted Ti sponge, Aluminum and master alloys. Cast parts are subject to HIP treatment and mechanical machining.

### Applications

Due to their fine grained microstructure, TiAl TNM®-B1 forging stocks are used as feed stock materials for forging operations to oversized  $\gamma$ -TiAl components.

### Chemical Composition

Ti -43.5Al -4Nb -1Mo -0.1B (at.-%)

#### Alloying Elements (wt.-%)

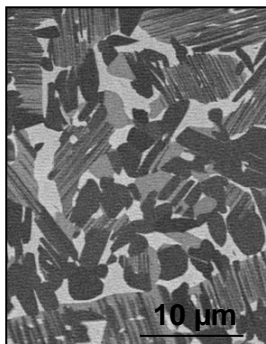
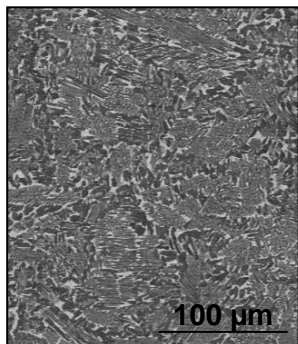
Ti	Al	Nb	Mo	B
bal.	28,6	9,2	2,3	0,026
	+/- 0.7	+/- 0.5	+/- 0.5	+/- 0.05

#### Impurities (wt.-ppm)

H	N	O	C	Fe	Ni
< 50	< 200	< 800	< 200	< 1000	< 500

### Forms of Delivery

Cylindrical slugs of 30 mm – 70 mm diameter and up to 350 mm length. Surface conditions as-cast or mechanically machined. Other sizes and individual customer specifications on request.



### Physical Properties

Density:	4.16 g/cm <sup>3</sup>
Hardness:	350 HV10
Youngs Modulus (RT):	150 GPa
(700 °C):	130 GPa

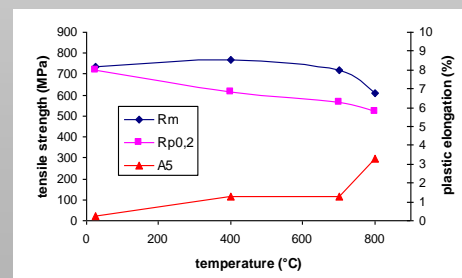
Microstructure consists of:

- $\alpha_2/\gamma$  lamellar colonies
- globular  $\beta/\text{B2}$  grains
- globular  $\gamma$ -TiAl grains
- globular  $\alpha_2\text{-Ti}_3\text{Al}$  grains

$T_{\text{eutectoid}}$ : 1160 °C

$T_{\alpha\text{-transus}}$ : 1250 °C

Working Temp.: up to 850 °C



#### AMG TITANIUM ALLOYS & COATINGS

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