

# ELECTRON BEAM MELTING - EBM

Uddeholm Vanadis 4 Extra SuperClean is also available as powder for processing by electron beam melting technology. This powder has the same chemical composition as the PM material.

## POWDER CHARACTERISTICS

### SHAPE DISTRIBUTION AND DENSITY

Sphericity	0.93
Aspect ratio	0.90
Apparent density, kg/m <sup>3</sup>	4400
Tap density, kg/m <sup>3</sup>	5000
True density, kg/m <sup>3</sup>	7740

### PARTICLE SIZE AND SHAPE DISTRIBUTION

D10, µm	D50, µm	D90, µm
55	75	110

After EBM processing is the following heat treatment recommended:

Solution annealing 1100°C (2012°F) for 30 minutes.

Tempering 540°C (1004°F) 4 times for 1 hour

The physical and mechanical properties of the EBM processed material is the same as for the PM material except for the data below:

	Hardness, HRC	Unnotched Impact Toughness, J	Compressive strength, MPa	Youngs modulus, GPa
EBM Processed Uddeholm Vanadis 4 Extra	64	20	2700	225

## FURTHER INFORMATION

Please contact your local Uddeholm office for further information on the selection, heat treatment, application and availability of Uddeholm tool steel.