



# ALPHA 1 (ESR)

Forged High Speed Steel

## Chemical composition

	C	Cr	Mo	W	Co	V
<b>ALPHA1</b>	<b>0.8</b>	<b>4.0</b>	<b>8.5</b>	<b>1.7</b>	-	<b>1.2</b>
ALPHA2	0.9	4.2	5.0	6.5	-	1.9
ALPHA3	1.2	4.1	5.0	6.2	-	3.0
ALPHA4	1.3	4.2	4.5	5.5	-	4.0
ALPHA7	1.0	4.0	8.6	1.8	-	1.9

Standards; AISI M1. Werkstoff 1.3346.

## Properties

	Hardness HRC
<b>ALPHA1</b>	<b>≤ 65</b>
ALPHA2	≤ 64
ALPHA3	≤ 66
ALPHA4	≤ 66
ALPHA7	≤ 66

  

	Density g/cm <sup>3</sup>	Young's modulus GPa
<b>ALPHA1</b>	<b>8.0</b>	<b>225</b>

## Description

Conventional molybdenum based high speed steel manufactured according to Union Electric Åkers specification.

ALPHA1 is also available further refined by ESR (Electro Slag Remelting).

ALPHA1 is supplied in through hardened condition.

## Applications

Work rolls in 20-high mills for cold rolling of ferrous and non ferrous products.

Work rolls in Z-high mills for cold rolling of ferrous and non ferrous products.

Smaller diameter 2-high and 4-high narrow strip mill work roll for cold rolling of ferrous and non ferrous products.

## Features & Benefits

- ALPHA1 offers a good compromise between toughness and hardness.
- Good grindability.
- High thermal shock resistance.

## Comparative properties

	Wear resistance	Toughness	Grindability
<b>ALPHA1</b>	=====	=====	=====
ALPHA2	=====	=====	=====
ALPHA3	=====	=====	=====
ALPHA4	=====	=====	=====
ALPHA7	=====	=====	=====

Union Electric Åkers  
www.uniones.com