



# FORSA 4A and FORSA 4B

*Forged Steel*

## Chemical composition

	C	Mn	Si	Cr	Mo	Ni
<b>FORSA 5</b>	0.4	0.7	0.3	0.5	0.1	-
	0.6	0.9	0.4	0.6	0.2	-
FORSA 4A	0.3	0.7	0.3	0.9	0.2	-
	0.5	0.9	0.4	1.1	0.25	-
FORSA 4B	0.3	0.7	0.3	0.9	0.3	-
	0.5	0.9	0.4	1.1	0.35	-
FORSA 5A	0.4	0.7	0.3	0.9	0.2	-
	0.6	0.9	0.4	1.1	0.25	-
FORSA 5B	0.4	0.7	0.3	0.9	0.3	-
	0.6	0.9	0.4	1.1	0.35	-
FORSA 6A	0.5	0.3	0.3	0.9	0.2	-
	0.7	0.5	0.4	1.1	0.25	-
FORSA 6B	0.5	0.3	0.2	1.4	0.3	-
	0.7	0.5	0.4	1.6	0.35	-
FORSA 8A	0.7	0.3	0.2	1.4	0.2	-
	0.9	0.5	0.4	1.6	0.25	-
FORSA 8B	0.7	0.3	0.2	1.4	0.3	-
	0.9	0.5	0.4	1.6	0.35	-
FORSA 8BN	0.7	0.3	0.3	1.4	0.3	0.6
	0.9	0.5	0.4	1.6	0.35	0.8
FORSA 3CN	0.3	0.3	0.2	1.5	0.4	1.5
	0.4	0.5	0.4	2.5	0.5	2.5

## Properties

	Hardness HB	Tensile strength MPa	Elongation %
<b>FORSA 5</b>	<b>200-240</b>	<b>700-800</b>	<b>&gt;16</b>
FORSA 4A	220-260	750-900	>14
FORSA 4B	240-300	800-1000	>14
FORSA 5A	240-300	800-1000	>14
FORSA 5B	240-320	800-1100	>14
FORSA 6A	240-320	800-1100	>12
FORSA 6B	270-320	900-1100	>14
FORSA 8A	280-320	950-1100	>10
FORSA 8B	280-320	950-1100	>12
FORSA 8BN	270-320	950-1100	>14
FORSA 3CN	240-300	800-1000	>18

## Features & Benefits

- Excellent fire crack resistance
- Very good wear resistance

## Description

Forged steel alloyed with Cr and Mo with a fine perlitic or bainitic structure (heat treatment is specially adapted for grade and required microstructure)

## Applications

Work rolls in intermediate stands of heavy section mills

Work rolls in roughing stands with high thermal and mechanical fatigue

## Comparative properties

	Fire crack resistance	Toughness	Wear resistance
<b>FORSA 5</b>	<b>***</b>	<b>**</b>	<b>*</b>
FORSA 4A	**	**	*
FORSA 4B	***	**	*
FORSA 5A	**	**	**
FORSA 5B	***	**	**
FORSA 6A	**	**	**
FORSA 6B	***	**	**
FORSA 8A	**	*	***
FORSA 8B	***	*	***
FORSA 8BN	****	**	***
FORSA 3CN	****	****	**