



# FORSA 4A and FORSA 4B

*Forged Steel*

## Chemical composition

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

## 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	****	****	**

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