

## L415MB<sup>1)</sup>

### Hot-rolled coils for the manufacture of large-diameter pipes

Material no.	<b>1.8973</b>
according to	<b>DIN EN 10208-2<sup>2)</sup></b>
Tensile strength class	<b>C</b>

1) Other standards or specifications by agreement.

2)

#### General

Salzgitter Flachstahl supplies hotrolled wide coil for the manufacture of large-diameter pipes. Large-diameter pipes are predominantly used for carrying gas and liquids under high pressure and as piling pipes. There are different manufacturing processes. The technological values of the finished pipe are laid down in the standards API 5L and DIN EN 10208-2. Salzgitter Flachstahl warrants the hot-rolled wide coil standards. When ordering hot-rolled wide coil for pipe manufacturing, the necessary technical key data have to be coordinated. Information about pipe diameter and welding process allow an estimation of the pipe data<sup>1)</sup>. The large diameter pipe qualities (according to API 5L through X70 or according to DIN EN 10208 through L485MB) of Salzgitter Flachstahl have been tested and approved by the Technischer Überwachungsverein (TÜV) for application in longdistance pipelines (incl. DIN 2470, part 2).

#### Chemical composition<sup>1)2)</sup>

(in percent by weight)

	min.	max.
C		0.16 % <sup>3)</sup>
Si		0.45 %
Mn		1.60 % <sup>3)</sup>
P		0.025 %
S		0.020 %
Ti		0.06 % <sup>4)</sup>
V		0.08 % <sup>4)</sup>
Nb		0.05 % <sup>4)</sup>
Mo		<sup>5)</sup>
C <sub>E</sub>		0.42 % <sup>6)</sup>

1) Heat analysis

2)  $0.015 \leq Al_{total} < 0.060$ ;  $N \leq 0.012$ ;  $Al / N \geq 2$ ;  
 $Cu \leq 0.25$ ;  $Ni \leq 0.30$ ;  $Cr \leq 0.30$ ;  $Mo \leq 0.10$

3) For a reduction by 0.01 % each below the max. carbon content an increase of the manganese content by 0.05 % above the max. value is permissible, the increase being limited to 0.2 %.

4) The total V, Nb and Ti-contents must not exceed 0.15 %.

5)

6) A max. carbon equivalent

$C_E = C + Mn / 6 + (Cr + Mo + V) / 5 + (Cu + Ni) / 15$   
is determined for the check analysis only.

#### Mechanical properties<sup>1)</sup>

Nom. thick. e	Yield strength R <sub>t0.5</sub>
≤ 25 mm	415 – 565 MPa
Nom. thick. e	Tensile strength R <sub>m</sub>
≤ 25 mm	≥ 520 MPa
Nom. thick. e	Yield point R <sub>t0.5</sub> /R <sub>m</sub> <sup>2)</sup>
≤ 25 mm	≤ 0.85 %
Nom. thick. e	Total elongation A
	≥ 18 %

1) Values for pipe circumference tests.

2)

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#### Hot-forming properties

Hot forming of the thermomechanically rolled steel grades L245MB - L485MB above 580 °C may cause a decrease of yield point and tensile strength and should therefore be avoided. If the pipes are intended for manufacturing inductive bends, this has to be coordinated with the producer.

#### Welding

Observing the general technical directions, the steel is weldable by hand as well as mechanically according to all electric processes. A preheating of the steel for welding purposes is not necessary if normal laying conditions prevail. It has to be taken into account that the behaviour of this steel during welding and thereafter depends not only on the material but also on the conditions of welding the pipeline and may thus be impaired.

The filler metals to be used for these tensile strengths are welding rods and electrodes approved accordingly.

#### Available dimensions

Hot-rolled coils unpickled, mill edge

Thickness in mm	Width in mm
2.00 – 2.24	900 – 1300
2.25 – 2.99	900 – 1350
3.00 – 3.99	900 – 1550
4.00 – 12.70	900 – 1650

Thicknesses ≤ 25 mm on request.  
Widths ≤ 2000 mm on request.

#### Hot-rolled slit strip

Thickness in mm	Width in mm
2.00 – 2.99	100 – 640
3.00 – 4.60	100 – 690
4.61 – 6.00	116 – 740

Widths < 100 mm on request.  
Thicknesses > 6 mm on request.

#### Hot-rolled coils pickled, mill edge

Thickness in mm	Width in mm
2.00 – 2.24	900 – 1300
2.25 – 2.99	900 – 1350
3.00 – 3.99	900 – 1550
4.00 – 6.00	900 – 1650
6.01 – 12.70	900 – 1520

#### Condition of delivery, scope of testing and certificate

Delivery and test can be agreed to be made similar to DIN EN 10208-2 and API 5 L.

Test certificates according to DIN EN 10204 can be supplied as follows: EDP, remote data transmission, fax, e-mail, paper.

#### Hot-rolled coils pickled, trimmed edge

Thickness in mm	Width in mm
2.00 – 2.24	900 – 1280
2.25 – 2.49	900 – 1330
2.50 – 2.99	900 – 1335
3.00 – 3.99	900 – 1535
4.00 – 6.00	900 – 1635
6.01 – 7.00	900 – 1500