

## Material specification sheet

### Saarstahl - C20E2C (Cq22)

Material No.:	Former brand name:	International steel grades:
1.1152	RKS20	BS: AFNOR: SAE:

**Material group:** Steel for cold extrusion according to DIN EN 10263

Chemical composition: (Typical analysis in %)	C	Si	Mn	P	S	Cu
	0,20	0,20	0,50	<0,025	<0,025	<0,25

**Application:** Plain carbon cold heading steel for screws and nuts.

<b>Hot forming and heat treatment:</b>	Soft annealing:	680 - 710°C
	Hardening:	870 - 900°C/water
	Tempering:	530 - 670°C

#### Mechanical Properties:

Untreated (+U) or untreated + as hot rolled (+PE)

Diameter d [mm]	> 2 - 5	> 5 - 10	> 10 - 40	> 40 - 100
Tensile strength R <sub>m</sub> [N/mm <sup>2</sup> ]	-	max. 530	max. 530	max. 530
Reduction of area Z [%]	-	min. 58	min. 58	min. 58

Spheroidized annealed (+AC) or spheroidized annealed + peeled (+AC+PE)

Diameter d [mm]	> 2 - 5	> 5 - 10	> 10 - 40	> 40 - 100
Tensile strength R <sub>m</sub> [N/mm <sup>2</sup> ]	-	max. 470	max. 470	max. 470
Reduction of area Z [%]	-	min. 65	min. 65	min. 65

Untreated + cold drawn (+U+C)

<b>Diameter d [mm]</b>	> 2 - 5	> 5 - 10	> 10 - 40	> 40 - 100
<b>Tensile strength <math>R_m</math> [N/mm<sup>2</sup>]</b>	-	max. 640	max. 630	-
<b>Reduction of area Z [%]</b>	-	min. 56	min. 56	-

Untreated + cold drawn + spheroidized annealed (+U+C+AC)

<b>Diameter d [mm]</b>	> 2 - 5	> 5 - 10	> 10 - 40	> 40 - 100
<b>Tensile strength <math>R_m</math> [N/mm<sup>2</sup>]</b>	max. 460	max. 450	max. 450	-
<b>Reduction of area Z [%]</b>	min. 67	min. 67	min. 67	-

Untreated + cold drawn + spheroidized annealed + stretch reduced by roll drawing (+U+C+AC+LC)

<b>Diameter d [mm]</b>	> 2 - 5	> 5 - 10	> 10 - 40	> 40 - 100
<b>Tensile strength <math>R_m</math> [N/mm<sup>2</sup>]</b>	max. 500	max. 490	max. 490	-
<b>Reduction of area Z [%]</b>	min. 65	min. 65	min. 65	-

Spheroidized annealed + cold drawn (+AC+C)

<b>Diameter d [mm]</b>	> 2 - 5	> 5 - 10	> 10 - 40	> 40 - 100
<b>Tensile strength <math>R_m</math> [N/mm<sup>2</sup>]</b>	-	max. 580	max. 570	-
<b>Reduction of area Z [%]</b>	-	min. 62	min. 62	-