

## Delivery Conditions for structural steels

### S235JR; S355JS; E335

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### Changes

2023-06-09:

The following changed in comparison to RN 800:2023-04-06:

- a) updated references
- b) Scope specified
- c) Chapter 6 b) Requirements for welded constructions supplemented
- d) editorially revised

Responsible division: PK	Editor M. Förste	Approval: see doc. workflow	Technical reference: C. Eschert	Page: 1 / 4
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## 1 Scope

This Factory Standard applies to products of non-alloy structural steels according to the references in para. 2. This Standard applies with priority over the standards mentioned below. It applies to holders, brackets, welded components, housings and other components made of the materials mentioned, but not to pipes and pipelines.

## 2 References

The following documents, cited in part or in whole, shall apply for the use of this standard. In the case of dated references, only the referenced edition applies; in the case of undated references, the latest edition of the referenced document (including all amendments) applies. The applicable version of the standards listed below shall apply to all contents not covered by this factory standard.

EN 10021	General technical delivery conditions for steel products
EN 10025-1	Hot rolled products of structural steels - Part 1: General technical delivery conditions
EN 10025-2	Hot rolled products of structural steels - Part 2: Technical delivery conditions for non-alloy structural steels
EN 10163-1	Delivery requirements for surface condition of hot-rolled steel plates, wide flats and sections - Part 1: General requirements
EN 10163-2	Delivery requirements for surface conditions of hot-rolled steel plates, wide flats and sections - Part 2: Plate and wide flats
EN 10204	Metallic products - Types of inspection documents
RN 68-1	Welded constructions; Steel housings
RN 68-2	Welded constructions; Housings for type yacht premium
RN 72	Packaging and Preservation; Supply parts for production
RN 1550	Material samples
RN 1567	Remanent magnetism in components
RN 1936	Labelling; Raw material, parts and gearboxes

## 3 Terms and Definitions

<b>as rolled</b>	conventional hot rolling without normalising or thermomechanical rolling and/or heat treatment conditions such as normalising or quenching The symbol for this delivery condition is <b>+AR</b>
<b>normal annealing</b>	heat treatment consisting of austenitisation followed by air cooling The symbol for this delivery condition is <b>+N</b>
<b>normalising rolling</b>	rolling process with a final forming in a specific temperature range, which leads to a material condition equivalent to that after normalising, so that the set values of the mechanical properties are maintained even after an additional normalising The symbol for this delivery condition is <b>+N</b>

## 4 Requirements

### 4.1 Chemical analysis

Note: values in bold in the tables deviate from the maximum specifications of the standard

**Table 1 Smelt analysis (acc. to EN 10025-2, Table 2 + 3, Mass fractions in %)**

Steel name	Material No.	C	Si	Mn	P	S	N	Cu
S235JR	1.0038	0,17	--	1,40	0,035	0,035	0,012	≤ 0,40
S355J2	1.0577	<b>0,22</b>	0,55	1,60	0,025	<b>0,030</b>	--	≤ 0,40
E335	1.0060	--	--	--	0,045	0,045	0,012	--

### 4.2 Mechanical properties

**Table 2 Minimum yield strength  $R_{eH}$  (acc. to EN 10025-2, Table 7 + 8, in N/mm<sup>2</sup>)**

Steel name	Nominal thickness in mm							
	≤ 16	> 16 ≤ 40	> 40 ≤ 63	> 63 ≤ 80	> 80 ≤ 100	> 100 ≤ 150	> 150 ≤ 200	> 200 ≤ 250
S235JR	235	225	215	215	215	195	185	175
S355J2	355	345	335	325	315	295	285	275
E335	335	325	315	305	295	275	265	255

**Table 3 Tensile strength  $R_m$  (acc. to EN 10025-2, Table 7 + 8, in N/mm<sup>2</sup>)**

Steel name	Nominal thickness in mm			
	≥ 3 ≤ 100	> 100 ≤ 150	> 150 ≤ 250	> 250 ≤ 400
S235JR	360 - 510	350 - 500	340 - 490	330 - 480
S355J2	470 - 630	450 - 600	450 - 600	450 - 600
E335	570 - 710	550 - 710	540 - 710	540 - 710

### 4.3 Heat treatment

**Table 4 Required delivery conditions**

Steel name	Heat treatment condition	Note
S235JR	+AR	for small parts with low mechanical load: e. g. holder, covers etc.
	+N	for parts with higher mechanical load: e.g. housings
S355J2	+N	all parts
E335	--	no indication

## 5 Order details

Table 5 Order details

Steel name	Heat treatment condition	Cu	Examples
S235JR	+AR +N	≤ 0,40	Werkstoff S235JR +AR mit Cu ≤ 0,40% Werkstoff S235JR +N mit Cu ≤ 0,40%
S355J2	+N	≤ 0,40	Werkstoff S355J2 +N mit Cu ≤ 0,40%
E335	--	--	Werkstoff E335

## 6 Other requirements

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- a) Steel and forging plant
- certified acc. to: [DIN EN ISO 9001 ff.](#)
  - approved by at least two member societies of IACS
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- b) Further requirements for welded constructions (if specified in the order)
- [RN 68-1 and/or](#)
  - [RN 68-2](#)
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- c) Packaging and preservation
- [RN 72](#)
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- d) Sample material and collection
- [RN 1550](#)
- 
- e) Remanent magnetism
- [RN 1567](#)
- 
- f) Labelling
- [RN 1936](#)
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- g) Documentation (must be digitally available upon delivery)
- acceptance test certificate EN 10204 - 3.1 per melt and furnace trip or per piece or production lot with specification of primary material and forging ratio
  - copy of the acceptance test certificate 3.1 from the steel manufacturer
  - evidence of radioactivity and remanent magnetism
  - forging schedule (on special request)