

INDUSTRIELAAN 4 B-8501 KORTRIJK-HEULE Belgium

DECLARATION OF PERFORMANCE¹ N°

EN 1090-1 DoP ENG. 03 EN10025-2

1 Unique identification code of the product-type:

Component(s)² according to EN 1090-2 following customer's specification and produced out of hot rolled products of structural steels, made according to EN 10025-1+2 ; with types and grades:

- **S235JR - 1.0038**
- **S235JO - 1.0114**
- **S235J2 - 1.0117**
- **S275JR - 1.0044**
- **S275JO - 1.0143**
- **S275J2 - 1.0145**
- **S355JR - 1.0045**
- **S355JO - 1.0553**
- **S355J2 - 1.0577**
- **S355K2 - 1.0596**
- **S450JO - 1.0590**
- Applied processes: activities of manufacturing (3.6), execution (3.7), preparation (3.12) according to EN 1090-2+A1:2013.
- Applicable processes: decoiling and cutting to length of sheets, sawing, shearing and nibbling, thermal cutting, laser cutting, drilling of holes, shot blasting, painting, batch galvanizing, electrolytic zinc coating, coating

2 Intended use/es:

For structural use in all types of construction works according to EN 1090-1.

3 Manufacturer:

SAEY nv/sa – SAEY sarl, Industrielaan 4, B-8501 Heule

4 Authorised representative: **not of application**

5 System of AVCP:

System 2+, Declaration of the performance of the essential characteristics of the construction product by the manufacturer

¹ As reproduced from COMMISSION DELEGATED REGULATION (EU) No 574/2014 of 21 February 2014 amending Annex III to Regulation (EU) No 305/2011 of the European Parliament and of the Council on the model to be used for drawing up a declaration of performance on construction products. The CPR* takes precedence over the (annexes ZA of the harmonised) standards that must still be reviewed. [* Including its article 61 "The power to adopt delegated acts referred to in Article 60 shall be conferred on the Commission for a period of 5 years from 24 April 2011."]

² According to article 3.11 of EN 1090-2:2008+A1:2011 (E)

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6 Harmonised standard, Notified body:

EN 1090-1:2009+A1:2011, OCAB-OCBS CE1148 performed initial inspection of the manufacturing plant and of factory production control and performs continuous surveillance, assessment and evaluation of factory production control under system **2+** and issued the certificate of conformity of the factory production control **2014-07-11**.

7 Declared performance(s)

| NBN EN 1090-1+A1 : 2012 | | |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| Essential characteristics | Performance | Harmonised technical specification |
| Tolerances on dimensions and shape | Tolerances according to the class for fundamental tolerances in EN1090-2 and according to article 7.7 of EN10025-2 | 4.2 ; 5.3 |
| Weldability | According to article 7.4.1 and table 2 and 6 of EN 10025-2 | 4.3 ; 5.4 |
| Fracture toughness, Impact resistance | According to article 7.3.2 and table 9 of EN 10025-2 | 4.3 ; 5.4 ; 4.8 ; 5.10 |
| Load bearing capacity | According to article 7.3.1 and table 7 of EN 10025-2 | 4.5.1 ; 4.5.2 ; 5.6.2 |
| Deformation in Service limit state | NPD (no performance declared) | 4.5.5 |
| Fatigue strength | NPD | 4.5.1 ; 4.5.3 ; 5.6.2 |
| Resistance to fire | NPD | 4.5.1 ; 4.5.4 ; 5.7 |
| Reaction to fire | Class A1 for products without coating | 4.6 ; 5.8 |
| Release of cadmium and its compounds | NPD | 4.7 ; 5.9 |
| Emission of radioactivity | NPD | 4.7 ; 5.9 |
| Durability | According to article 7.4.1 and table 2 of EN 10025-2 Suitability for hot dip galvanizing in accordance with EN ISO 1461 and EN ISO 14713-2 | 4.9 ; 5.11 |

8 Appropriate Technical Documentation and/or Specific Technical Documentation:

- See included annexes (EN 10025-2: Table 2, 6, 7, 9) and CE-marking of the delivered components.

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

 Bernard Saey
 Managing Director

 Heule, August 13th, 2018.


INCLUDED ANNEXES : EN 10025-2 : tables 2, 6, 7, 9

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Table 2 - Chemical composition of the ladle analysis for flat and long products of steel grades and qualities with values for the impact strength ^a

| Designation | | Method of deoxidation ^b | C in % max. for nominal product thickness in mm | | | Si % max. | Mn % max. | P % max. | S % max. | N % max. | Cu % max. | Other % max. |
|-----------------------------------|----------------------|---------------------------------------|-------------------------------------------------|-------------------|-------------------|-----------|-----------|----------|----------|----------|-----------|--------------|
| According EN 10027-1 and CR 10280 | According EN 10027-2 | | ≤ 16 | > 16 ≤ 40 | > 40 ^c | | | | | | | |
| S235JR | 1.0038 | FN | 0,17 | 0,17 | 0,20 | - | 1,40 | 0,035 | 0,035 | 0,012 | 0,55 | - |
| S235J0 | 1.0114 | FN | 0,17 | 0,17 | 0,17 | - | 1,40 | 0,030 | 0,030 | 0,012 | 0,55 | - |
| S235J2 | 1.0117 | FF | 0,17 | 0,17 | 0,17 | - | 1,40 | 0,025 | 0,025 | - | 0,55 | - |
| S275JR | 1.0044 | FN | 0,21 | 0,21 | 0,22 | - | 1,50 | 0,035 | 0,035 | 0,012 | 0,55 | - |
| S275J0 | 1.0143 | FN | 0,18 | 0,18 | 0,18 ^f | - | 1,50 | 0,030 | 0,030 | 0,012 | 0,55 | - |
| S275J2 | 1.0145 | FF | 0,18 | 0,18 | 0,18 ^f | - | 1,50 | 0,025 | 0,025 | - | 0,55 | - |
| S355JR | 1.0045 | FN | 0,24 | 0,24 | 0,24 | 0,55 | 1,60 | 0,035 | 0,035 | 0,012 | 0,55 | - |
| S355J0 | 1.0553 | FN | 0,20 ⁱ | 0,20 ^h | 0,22 | 0,55 | 1,60 | 0,030 | 0,030 | 0,012 | 0,55 | - |
| S355J2 | 1.0577 | FF | 0,20 ⁱ | 0,20 ^h | 0,22 | 0,55 | 1,60 | 0,025 | 0,025 | - | 0,55 | - |
| S355K2 | 1.0596 | FF | 0,20 ⁱ | 0,20 ^h | 0,22 | 0,55 | 1,60 | 0,025 | 0,025 | - | 0,55 | - |
| S450J0 ^j | 1.0590 | FF | 0,20 | 0,20 ^h | 0,22 | 0,55 | 1,70 | 0,030 | 0,030 | 0,025 | 0,55 | ^m |

^a See 7.2.

^b FN = rimming steels not permitted; FF = fully killed steel (see 6.2.2).

^c For sections with nominal thickness > 100 mm the C content by agreement.

See option 26.

^d For long products the P and S content can be 0,005 % higher.

^e For long products the max. S content can be increased for improved machinability by 0,015 % by agreement if the steel is treated to modify the sulphide morphology and the chemical composition shows min. 0,0020 % Ca.

See option 27.

^f The max. value for nitrogen does not apply if the chemical composition shows a minimum total Al content of 0,020 % or alternatively min. 0,015 % acid soluble Al or if sufficient other N binding elements are present. In this case the N binding elements shall be mentioned in the inspection document.

^g Cu content above 0,40 % may cause hot shortness during hot forming.

^h If other elements are added, they shall be mentioned on the inspection document.

ⁱ For nominal thickness > 150 mm: C = 0,20 % max..

^j For grades suitable for cold roll forming (see 7.4.2.2.3): C = 0,22 % max..

^k For nominal thickness > 30 mm: C = 0,22 % max..

^l Applicable for long products only.

^m The steel may show a Nb content of max. 0,05 %, a V content of max. 0,13 % and a Ti content of max. 0,05 %.

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Table 6 - Maximum CEV based on the ladle analysis ^a

| Designation | | Method of deoxidation b | Maximum CEV in % for nominal product thickness in mm | | | | |
|-----------------------------------|---------------------|--------------------------------|------------------------------------------------------|--------------|---------------|-------------------|----------------|
| | | | ≤ 30 | > 30 ≤ 40 | > 40 ≤ 150 | > 150 ≤ 250 | > 250 ≤ 400 |
| According EN 10027-1 and CR 10260 | According EN10027-2 | | | | | | |
| S235JR | 1.0038 | FN | 0,35 | 0,35 | 0,38 | 0,40 | - |
| S235J0 | 1.0114 | FN | 0,35 | 0,35 | 0,38 | 0,40 | - |
| S235J2 | 1.0117 | FF | 0,35 | 0,35 | 0,38 | 0,40 | 0,40 |
| S275JR | 1.0044 | FN | 0,40 | 0,40 | 0,42 | 0,44 | - |
| S275J0 | 1.0143 | FN | 0,40 | 0,40 | 0,42 | 0,44 | - |
| S275J2 | 1.0145 | FF | 0,40 | 0,40 | 0,42 | 0,44 | 0,44 |
| S355JR | 1.0045 | FN | 0,45 | 0,47 | 0,47 | 0,49 ^c | - |
| S355J0 | 1.0553 | FN | 0,45 | 0,47 | 0,47 | 0,49 ^c | - |
| S355J2 | 1.0577 | FF | 0,45 | 0,47 | 0,47 | 0,49 ^c | 0,49 |
| S355K2 | 1.0596 | FF | 0,45 | 0,47 | 0,47 | 0,49 ^c | 0,49 |
| S450J0 ^d | 1.0590 | FF | 0,47 | 0,49 | 0,49 | - | - |

^a For the optional increase of elements which influence the CEV see 7.2.4 and 7.2.5.

^b FN = rimming steels not permitted; FF = fully killed steel (see 6.2.2).

^c For long products a maximum CEV of 0,54 applies.

^d Applicable for long products only.

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Table 7 - Mechanical properties at ambient temperature for flat and long products of steel grades and qualities with values for the impact strength

| Designation | Minimum yield strength R_{eH}^a MPa ^b | | | | | | | | | | Tensile strength R_m^a MPa ^b | | | | |
|--------------------------------------|-------------------------------------------------------|--------------|--------------|---------------|----------------|----------------|----------------|-----------------------------|------------|--------------|----------------------------------------------|----------------|-----------------------------|--|--|
| | Nominal thickness mm | | | | | | | | | | Nominal thickness mm | | | | |
| | > 16 ≤ 40 | > 40 ≤ 63 | > 63 ≤ 80 | > 80 ≤ 100 | > 100 ≤ 150 | > 150 ≤ 200 | > 200 ≤ 250 | > 250 ≤ 400 ^c | < 3 | ≥ 3 ≤ 100 | > 100 ≤ 150 | > 150 ≤ 250 | > 250 ≤ 400 ^c | | |
| According to EN 10027-1 and CR 10280 | According to EN 10027-2 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | | |
| S235JR | 1.0038 | 215 | 215 | 215 | 215 | 215 | 185 | 360 to 510 | 360 to 510 | 350 to 500 | 340 to 490 | - | | | |
| S235J0 | 1.0114 | 215 | 215 | 215 | 215 | 195 | 185 | 360 to 510 | 360 to 510 | 350 to 500 | 340 to 490 | - | | | |
| S235J2 | 1.0117 | 215 | 215 | 215 | 215 | 195 | 185 | 360 to 510 | 360 to 510 | 350 to 500 | 340 to 490 | 330 to 480 | | | |
| S275JR | 1.0044 | 265 | 255 | 245 | 235 | 225 | 215 | 430 to 590 | 410 to 560 | 400 to 540 | 380 to 540 | - | | | |
| S275J0 | 1.0143 | 265 | 255 | 245 | 235 | 225 | 215 | 430 to 590 | 410 to 560 | 400 to 540 | 380 to 540 | - | | | |
| S275J2 | 1.0145 | 265 | 255 | 245 | 235 | 225 | 215 | 430 to 590 | 410 to 560 | 400 to 540 | 380 to 540 | 380 to 540 | | | |
| S355JR | 1.0045 | 345 | 335 | 325 | 315 | 295 | 285 | 510 to 680 | 470 to 630 | 450 to 600 | 450 to 600 | - | | | |
| S355J0 | 1.0553 | 345 | 335 | 325 | 315 | 295 | 285 | 510 to 680 | 470 to 630 | 450 to 600 | 450 to 600 | - | | | |
| S355J2 | 1.0577 | 345 | 335 | 325 | 315 | 295 | 285 | 510 to 680 | 470 to 630 | 450 to 600 | 450 to 600 | 450 to 600 | | | |
| S355K2 | 1.0595 | 345 | 335 | 325 | 315 | 295 | 285 | 510 to 680 | 470 to 630 | 450 to 600 | 450 to 600 | 450 to 600 | | | |
| S450J0 ^d | 1.0590 | 430 | 410 | 390 | 380 | 380 | - | - | 550 to 720 | 530 to 700 | - | - | | | |

^a For plate, strip and wide flats with widths ≥ 600 mm the direction transverse (t) to the rolling direction applies. For all other products the values apply for the direction parallel (l) to the rolling direction.

^b 1 MPa = 1 N/mm².

^c The values apply to flat products.

^d Applicable for long products only.

(To be continued)

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Table 9 - Mechanical properties - impact strength KV longitudinal for flat and long products ^a

| Designation | | Temperature °C | Minimum energy (J) Nominal thickness in mm | | |
|--------------------------------------------|-------------------------|-----------------------|--------------------------------------------------|--------------------------------|--------------------------------|
| According EN 10027-1 and CR 10260 | According EN 10027-2 | | ≤ 150 ^{a b} | > 150 ≤ 250 ^b | > 250 ≤ 400 ^c |
| S235JR | 1.0038 | 20 | 27 | 27 | - |
| S235J0 | 1.0114 | 0 | 27 | 27 | - |
| S235J2 | 1.0117 | - 20 | 27 | 27 | 27 |
| S275JR | 1.0044 | 20 | 27 | 27 | - |
| S275J0 | 1.0143 | 0 | 27 | 27 | - |
| S275J2 | 1.0145 | - 20 | 27 | 27 | 27 |
| S355JR | 1.0045 | 20 | 27 | 27 | - |
| S355J0 | 1.0553 | 0 | 27 | 27 | - |
| S355J2 | 1.0577 | - 20 | 27 | 27 | 27 |
| S355K2 | 1.0596 | - 20 | 40 ^d | 33 | 33 |
| S450J0 ^e | 1.0590 | 0 | 27 | - | - |

^a For nominal thicknesses ≤ 12 mm see 7.3.2.1 of EN 10025-1:2004.
^b For sections with a nominal thickness > 100 mm the values shall be agreed.
 See option 28.
^c The values apply to flat products.
^d This value corresponds with 27J at - 30 °C (see Eurocode 3).
^e Applicable for long products only.