

DEPARTMENT FOR MATERIALS

Laboratory for Metals, Corrosion and Anti-Corrosion Protection

Ljubljana, 4. 10. 2021

**REPORT****No. 148/17-440-14**on impact test of steel pipe in accordance with the  
standards ISO 148-1:2017

Orderer: **METALNA SENOVO d.o.o.**  
**Titova cesta 52, 8281 Senovo**

Order/contract: **283/2017 dated on 9. 2. 2017**

Responsible Investigator: **mag. Andrej Kranjc, dipl. inž. fiz.**

Head of Laboratory: **dr. Tadeja Kosec, univ. dipl. kem.**

Director: **doc. dr. Aleš Žnidarič, univ. dipl. inž. grad.**

*p. Kranjc*  
*dr. T. Kosec*  
*doc. dr. A. Žnidarič*



## Table of content

|                                                           |   |
|-----------------------------------------------------------|---|
| 1. Introduction .....                                     | 3 |
| 2. Subject of investigation .....                         | 3 |
| 2.1 Description and marking of the samples supplied ..... | 3 |
| 3. Test procedure .....                                   | 3 |
| 3.1 Impact test at low temperature (0°C).....             | 3 |
| 4. Test results .....                                     | 4 |
| 4.1 Impact test at low temperature (0°C).....             | 4 |



## 1. Introduction

In accordance with the order from Metalna Senovo d.o.o. ZAG performed impact strength at low temperature ( $-0^{\circ}\text{C}$ ) with the standard SIST EN ISO 148-1:2017 (ISO 148-1:2016) of steel pipe. Steel pipe sample is listed in Table 1. The sample was delivered to ZAG on September 27<sup>th</sup>, 2021.

## 2. Subject of testing

### 2.1 Description and marking of the samples supplied

Sampling was performed by the client.

Table 1: Description of the samples supplied.

| ZAG identification No. | Type       | Steel pipe dimensions [mm] | Grade  | Metalna Senovo ID No. | Producer Certificate number | Heat No.   |
|------------------------|------------|----------------------------|--------|-----------------------|-----------------------------|------------|
| Z/2203/21              | steel pipe | $\Phi 1220 \times 8$       | S235JR | -                     | Akmermer CE-21-163          | 1T21221310 |

## 3. Test procedure

### 3.1 Impact test at low temperature ( $0^{\circ}\text{C}$ )

Tests were performed on October 1<sup>st</sup>, 2021 in accordance with standards SIST EN ISO 148-1:2017 - Metallic materials - Charpy pendulum impact test - Part 1: Test method (ISO 148-1:2016).

Test machine used: pendulum test machine OTTO WOLPERT PW 30/15 K-E (KV 300).  
Stiker diameter: 2 mm (KV<sub>2</sub>)

The test pieces were standard with V notch, taken in transverse direction. Charpy pieces were taken from specimens according to standard SIST EN 10025-1:2004. Charpy pieces were machined by ZAG.



## 4. Test results

### 4.1 Impact test at low temperature (0°C)

Table 4: Results of impact test at low temperature (0°C)

| Designation<br>of the<br>sample<br>(by ZAG) | Absorbed energy<br>KV 300/2,5<br>(KV2)<br>[J] |   |   |       | Absorbed energy<br>KV 300/5<br>(KV2)<br>[J] |   |   |       | Absorbed energy<br>KV 300/7,5<br>(KV2)<br>[J] |     |     |       | Absorbed energy<br>KV 300/10<br>(KV2)<br>[J] |   |   |       |
|---------------------------------------------|-----------------------------------------------|---|---|-------|---------------------------------------------|---|---|-------|-----------------------------------------------|-----|-----|-------|----------------------------------------------|---|---|-------|
|                                             | 1                                             | 2 | 3 | Aver. | 1                                           | 2 | 3 | Aver. | 1                                             | 2   | 3   | Aver. | 1                                            | 2 | 3 | Aver. |
| Z/2203-1/21                                 | -                                             | - | - | -     | -                                           | - | - | -     | 166                                           | 186 | 165 | 172   | -                                            | - | - | -     |
| <b>Requirements<br/>at 0 °C</b>             | <b>≥ 6,75<sup>(1)</sup></b>                   |   |   |       | <b>≥ 13,5<sup>(1)</sup></b>                 |   |   |       | <b>≥ 20,25<sup>(1)</sup></b>                  |     |     |       | <b>≥ 27</b>                                  |   |   |       |

Notes: <sup>(1)</sup> In accordance with SIST EN 10025-1:2004, pt. 7.3.2.1. for samples of width less than 10 mm, the minimum permissible values given in SIST EN 10025-2 to SIST EN 10025-6 shall be reduced in proportion to the cross-sectional area of the test piece.

Report prepared by:

Slavko Pandža, B.Sc


