



## **TEST REPORT no. 218172 - A**

### **on compressed oxygen testing**

<b>Sample:</b>	<b>Compressed oxygen from a can</b>
<b>Analysis date:</b>	<b>October 25<sup>th</sup> - 30<sup>th</sup>, 2018 and November 2<sup>nd</sup> 2018</b>
<b>Test report date:</b>	<b>November 5<sup>th</sup> 2018</b>
<b>Test report version:</b>	<b>2</b>
<b>Number of pages:</b>	<b>6</b>
<b>Number of attachments:</b>	<b>0</b>
<b>Customer:</b>	<b>Air Rio, sole proprietorship for production and services</b> <b>Owner: Ivan Volarić</b> <b>Dražica 15</b> <b>51550 Mali Lošinj</b>

*This document may not be copied or published, except in its entirety and with the written consent of ANT Ltd.  
The subject results refer only to the sample test conditions described in this test report.*

## REGISTRATION

ANT Company is registered at Commercial Court in Zagreb, MBS 080301622, activity code 71.2 - technical testing and analysis. ANT Company is authorized for professional affairs by competent ministries: Ministry of Health, Institute for Improvement of Occupational Safety and Ministry of Environmental Protection and Energy.

## LIST OF AUTHORIZATIONS

Based on Decision issued by the Ministry of Health KLASA: UP/I-542-04/93-03/01 URBROJ: 534-04-10-93-02 dated January 10th, 1994, ANT Ltd is authorized for specific affairs originating from the Law on Sanitary Inspection.

Based on Decision issued by Institute for Improvement of Occupational Safety KLASA: UP/I-115-01/15-01/87, URBROJ: 425-02/2-17-9 dated June 14th, 2017, ANT Ltd is authorized for professional affairs concerning occupational safety:

1. performing occupational safety work with the employer
2. occupational safety training (training of workers to work in a safe manner and training of employers, supervisors and worker safety commissioners)

Based on Decision issued by the Ministry of Environmental Protection and Energy KLASA: UP/I 351-02/18-08/15, URBROJ: 517-03-1-2-18-3 dated October 15th, 2018, ANT Ltd is authorized for professional affairs concerning environmental protection:

1. Preparation of documentation for the environmental impact screening procedure and documentation for determining the contents of the environmental impact assessment study.
2. Preparation of reports on the state of the environment.
3. Preparation of environmental studies related to projects that are not subjected to environmental impact screening procedure
4. Preparation of special studies and reports for the assessment of the condition of environmental components.
5. Performing professional tasks for the needs of Environmental Pollution

Director:

Zoran Mačkić

# Contents

1. INTRODUCTION .....	4
2. PREPARATION AND ANALYSIS .....	5
3. TEST RESULTS.....	6

# 1. INTRODUCTION

Tests were performed in the premises of the laboratory that operates within ANT Ltd. Two oxygen filled cans were delivered to the company's address by the customer. Each can contains 5 liters of compressed gas called "airbreath OXYGEN" (Figure 1.)

Gas contents of a can were tested by FTIR analyzer Gasetm DX4000.



Figure 1. Compressed oxygen can

## 2. PREPARATION AND ANALYSIS

The laboratory conducted the following tests, before the analysis of the contents of the can, to ensure the quality of testing:

Test	Accordant
Leak test of the testing line	YES
Zeroing the analyzer with nitrogen 5.0 purity	YES

The buffer in the form of a gas storage bag was used in the testing line to ensure the working flow of the FTIR analyzer pump. Before the use of the buffer, i.e. the gas storage bag, a testing line was successfully tested for leaks, which proved that the bag was not mechanically damaged and further analysis could be conducted.

The entire testing line (tubing and the buffer) was filled with nitrogen four times, and the thoroughly emptied through the analyzer to ensure the testing line from external contamination.

After the preparation mentioned above, the analysis of the contents of the bottle was approached in such a way that, in parallel with the operation of the analyzer, the gas was dispensed from the can. To provide additional assurance that the surrounding air was not introduced into the testing line, but only the contents of the can, the results of the first liter of discharged gas were discarded.

The analysis included the following components:

- O<sub>2</sub> (oxygen)
- H<sub>2</sub>O (moisture)
- CO<sub>2</sub> (carbon dioxide)
- CO (carbon monoxide)
- total hydrocarbons
- NO<sub>x</sub> (nitrogen oxides)
- SO<sub>2</sub> (sulfur dioxide)

The processed results were compared to the requirements of the Grade E category of the standard CGA G 7.1. – 2011.

### 3. TEST RESULTS

Table 1. Test results

Analyzed gas	1 <sup>st</sup> can (average value)	2 <sup>nd</sup> can (average value)	CGA G-7.1 Grade E 2011	Accordant
O <sub>2</sub> (%)	> 99,5	> 99,5	Not applicable	
H <sub>2</sub> O (vol %)	0,00	0,00	-	-
CO <sub>2</sub> (ppm)	24,8	24,9	1000	YES
CO (ppm)	< 0,5	< 0,5	10	YES
Total hydrocarbons (ppm)	2,5	2,5	25	YES
NO <sub>x</sub> (ppm) (NO+NO <sub>2</sub> +N <sub>2</sub> O)	< 1	< 1	-	-
SO <sub>2</sub> (ppm)	< 1	< 1	-	-

Test report prepared by:

Test report reviewed by:

Zlatko Grčić, mag.biol.

Zoran Mačkić, head of a laboratory

Borjan Svetina, dipl.ing.geol.

Sanja Habuš