

## TECHNICAL DATA SHEET - CST 2241/02 - 29/09/2016

# CONTROLLER 3 EVOLUTION OXY

Maximum Temperature [°C]	Maximum Oxygen Pressure [bar]
up to 60	350
>60 up to 300	220

Maximum temperature and pressure with pure oxygen.

**Report**  
 on Testing a Nonmetallic Material  
 for Reactivity with Gaseous Oxygen and with Liquid Oxygen



Reference Number 2-28/2015 E

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Customer CARRARA S.p.A.  
 Via Provinciale, 1/E  
 25030 Adro (BS)  
 Italy

Order Date December 17, 2014

Reference Order No.: 1411897

Receipt of Order January 5, 2015

Test Samples Sealing material die-formed braided flexible graphite  
 packing ZGR80SGR OXY, batch 1422509;  
 BAM-Order-No.: 2.1/52.462

Receipt of Samples January 5, 2015

Test Date February 12 to May 29, 2015

Test Location BAM - Working Group "Safe Handling of Oxygen";  
 building no. 41, room no. 073 and no. 120

Test Procedure or Requirement According to DIN EN 1797:2002-02  
 „Cryogenic Vessels - Gas/Material Compatibility“  
 ISO 21010:2014  
 „Cryogenic Vessels - Gas/Material Compatibility“  
 Annex of pamphlet M 034-1 (BGI 617-1)  
 \*List of nonmetallic materials compatible with oxygen  
 by BAM Federal Institute for Material Research and Testing\*,  
 Edition: March 2014.  
 TRGS 407 Technical Rules for Hazardous Substances  
 \*Tätigkeiten mit Gasen - Gefährdungsbeurteilung“  
 chapter 3 "Informationsermittlung und  
 Gefährdungsbeurteilung" and  
 chapter 4 "Schutzmaßnahmen bei Tätigkeiten mit Gasen"  
 Edition: June 2013

Safety Related  
 Maximum Operating  
 Conditions See chapter 4 "Summary and Evaluation"

All pressures of this report are excess pressures.  
 This test report consists of page 1 to 6 and annex 1 to 4.

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 refer exclusively to the tested materials.  
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H Safety in technology and chemistry

TEST REPORT

## Composition

Formed braided rings of **ZGR80SGR OXY**.

## Features

**Controller 3 Evolution OXY** it's a special valve graphite packing composed by formed braided rings of **ZGR80SGR OXY**. The braided packing is manufactured with flexible graphite strands. This packing guarantees a very low weight loss (requirement EN 14772, section 6.7) and great sliding property. The packing is BAM approved no. 2-28/2015 E for Liquid and Gaseous Oxygen Service.

### Behaviour with pure oxygen:

- Up to temperature of 500°C no ignition of the graphite packing has been detected in five tests with final oxygen pressure of 262 bar.
- At the temperature of 225°C and pressure of 260 bar the graphite packing proved to be aging resistant.
- Up to temperature of 500°C no ignition of AGED graphite packing ZGR80SGR OXY has been detected in five tests with final oxygen pressure of 262 bar.
- This shows that as the non-aged sample also the aged sample did not ignite at the temperature of 500°C

## Applications

**Controller 3 Evolution OXY** is specific for Oxygen Service Industrial Valves.