

**Certificate N°** TAC-1266-309-2202-ISO

**Issue Date:** 26<sup>th</sup> April 2022

**Valid Until** 25<sup>th</sup> April 2032

**Manufacturer** S-Advanced materials CO., LTD

**Manufacturer's Mark**

**Address** 53, Buan 3nonggingdanji-gil, Haengan-myeon,  
Buan-gun, Jeollabuk-do, 56303



**Country** Korea

**Regulation[s]:** Not Applicable

**Design Specification:** ISO 11119-3:2013

**Cylinder Type:** Fully wrapped carbon fibre composite cylinder with non-metallic liner

**Drawing N°:** 103200-010100 (Model TA200TM190S)

**Revision:** 0

<b>Test Pressure:</b>	300	<b>bar</b>	<b>Service Pressure:</b>	200	<b>bar</b>
<b>Minimum Burst Pressure:</b>	600	<b>bar</b>	<b>Outside Diameter:</b>	458	<b>mm</b>
<b>Overall Length:</b>	1,540	<b>mm</b>	<b>Volume:</b>	190	<b>L</b>

**Design Material:** HDPE Liner and Composite Overwrap Material Carbon with Epoxy Resin

**Contents:** Hydrogen (UN 1049), Compressed Natural Gas (UN 1971), Nitrogen (UN 1066) & Compressed Air (UN 1002)

**Additional Information:** Derated wrap pattern variant of 103201-000100 (Model TA350TM190S), type approval certificate reference 1266-309-2201-ISO  
Model has been designed and tested in accordance with the requirements of ISO 11119-3:2013 for 20-year service life  
Prototype tested with 1 1/8-12 UNF 2B threadform

Revision N°	Revision History

Details of the results of the examination of the cylinder for type approval and the main features of the type are attached. The undersigned certifies that the cylinder type described above conforms to the requirements of ISO 11119-3:2013.

Beatriz Campos

Certifying Inspector

Arrowhead Industrial Services Limited

Meadow Drove Business Centre, Bourne, Lincolnshire, PE10 0BP, UK

ADR Inspection Body: Xa (Type A)

**Signature**

**Inspector's Mark**



# List of Technical Documents For Type Approval

## Type Approval Number TAC-1266-309-2202-ISO – Supporting Technical Documents

<b>Nº</b>	<b>Documents</b>	<b>References</b>
1	Application for Type Approval	Application dated 21 <sup>st</sup> April 2022
2	Cylinder Drawings	103200-010100 Rev 0
3	Liner Drawing	302300-000100 Rev 0
4	Stamp Mark Drawing	800102-05400
5	Stage 2 Test Review	TA200TM190S Stage 2 Test Review ISO 11119-3
6	Liner Material Tests	SAM-TA200-01 Page 6
7	Resin Shear Test	SAM-TA200-01 Pages 11-12
8	Boss Hardness Tests	SAM-TA200-01 Page 10
9	Hydraulic Pressure Test	SAM-TA200-01 Pages 16-20
10	Cylinder Burst	SAM-TA200-01 Pages 21-29
11	Liner Burst	Not Applicable to Design Variant
12	Ambient Cycle	SAM-TA200-01 Pages 30-44
13	Vacuum test	Not performed – warning applied to label
14	Environmental cycle	Not Applicable to Design Variant
15	Stress rupture test	N/A – No glass/aramid fibre load sharing
16	Flaw test	Not Applicable to Design Variant
17	Drop test	Not Applicable to Design Variant
18	High velocity impact test	Not Applicable to Design Variant
19	Fire resistance test	Not Applicable to Design Variant
20	Permeability test	Not Applicable to Design Variant
21	Torque test	Not Applicable to Design Variant
22	Salt water test	N/A – Not underwater application
23	Leak test	SAM-TA200-01 Pages 45-51
24	Pneumatic cycle test	Not Applicable to Design Variant
25	Water boil test	N/A – Not Type 5 linerless construction