# Catalina Cylinders

12452 Monarch Street Garden Grove, CA 92841

# Declaration of Conformity according to the European Pressure Equipment Directive 2010/35/EU and conforms with the requirements of the ADR/RID 2011 (PED)

For pressure equipment

The manufacturer herewith declares that the pressure equipment described below complies with the requirements of the Pressure Equipment Directive.

#### Description:

Aluminum Cylinder for Compressed Breathing Gas For Application in Breathing Apparatus

Model: S80.3

Volume [L]: 11.1

Test pressure Рн [bar]: 311

Service pressure Ps [bar]: 207

Serial numbers: GV0002720 - GV0002841

Year/month of Manufacture: 2014/02

Applied conformity assessment procedures: Modules B + C1

Applied Standards: ISO 7866; 1999

EC Type Examination Certificate: USA 11-02-189-005

Notified body in charge for monitoring of the final assessment: TUV SUD Industrie Service GmbH, Westendstr. 199 D-80686 Munchen, NB No: 0036

Date: 2/18/2014

Manufacturer's Stamp: Catalina

Name: Bob Lance

Position:

**Quality Manager** 

Signature <u>Bol Janu</u>

#### CERTIFICATE OF CONFORMANCE Application of ISO 7866:1999

## Seamless Aluminum Cylinders Model No. S80.3

MANUFACTURED FOR:

STOCK

MANUFACTURED BY:

CATALINA CYLINDERS,

7300 ANACONDA AVENUE, GARDEN GROVE, CALIFORNIA 92841

QUANTITY: 122

**SERIAL NUMBERS:** 

GV0002720

TO

GV0002841

BATCH NUMBER(S):

AF759

**HEAT NUMBER(S):** 

RH<sub>0</sub>

**TECHNICAL DATA:** 

**Service Pressure:** 

207Bar

**Test Pressure:** 

311 Bar

**Nominal Size** 

184.2 mm OD

Minimum Wall:

12.1 mm

657.9 mm Long (without cap and without valve)

**Nominal Volumetric Capacity:** 

11.1 Liters

CONSTRUCTION: Backward Extrusion to Form a Seamless Shell, the open end is closed by swaging.

MATERIAL AND HEAT TREATMENT: AA Alloy Designation 6061A. Solution Treatment and Artificial Aging to the

6061 T6 Condition

STAMP MARKING: Markings as noted on layout attached to this certificate.

I hereby certify that I have determined the cylinders covered by this Certificate of Conformance have been manufactured in accordance with the requirements of ISO Standard 7866:1999, and have passed all the inspections and tests required by this ISO Standard.

Remarks:

CATALINA CYLINDERS Garden Grove, CA

Signed:

Inspector

Date: 02-18-14

## **Measurement of Cylinders**

Batch No.	Serial Numbers	Water Capacity	Minimum m	easured thickness
AF759	GV0002720- GV0002841	100% Inspected all capacities 11.1L or greater	100% Wall Thickness Inspected all above 12.1 mm minimum	100% Base Thickness Inspected all above 18.7 mm minimum

# **Mechanical Testing**

Batch No.	Serial Numbers	Cast No.	Yield Stress (Mpa)	Tensile Stress (Mpa)	Elongation %	Flattening Test	Burst Test Serial No.	Burst Test (Bar)	Hardness
AF759	GV0002720 to GV0002841	RH0	281.4 335.4	355.1 350.1	28.9 18.0	ОК	GV0002764	568.8	OK

# Record of Chemical Analysis of Material for Cylinders

HEAT NO	Type of Analysis		CHEMICAL ANALYSIS												
(HEAT CODE)	(LADLE OR CHECK)	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Pb	Bi				
RH0	LADLE		.17	.31	.02	.92	.076	.00	.01	.000	.000				

Date: 02-18-14

Place: GARDEN GROVE, CALIFORNIA USA

Signature: A Color On behalf of Catalina Cylinders

#### RECORD OF RESIDUAL HYDROCARBON TESTING

(In Accordance with Fed Spec. RR-C-901C)

Lot No.	Serial Number	Total Hydrocarbons (mg)	Regulatory Level Allowed (mg)
AF759	GV0002720	5.5	9.00

Certificate of Residual Hydrocarbon Testing are on file at Manufacturer.

Certifying Entity: South Coast Pollution Control

This record of Residual Hydrocarbon Testing is provided for informational purposes only, it is not to be considered a part of the Certificate of Compliance and Test Report to which it is attached, and has not been certified or verified by T.H. Cochrane Laboratories, Ltd.

# **CYLINDER 100% HARDNESS TEST**

Cylind	ler type:	\$8	0.3		Lot n	umber:	AF	759
Highest	reading:	69	9.9		Lowest	reading:	63	3.2
Sample	readings:							
63.2	65.7	65.9	67.3	67.9	67.1	68.3	66.7	69.9
		:		dness ra	1			
			52	to	75			
	nctured by Catal 6 (11.3) standa nts:		ier was 1	uu% nar	dness tes	sted per t	ne	
				4-5-7-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1				
						A STATE OF THE STA		
Date:	02.17.14	1900aaniaania		Inspecte	d by:	M.A.		

QMF 06T

# **Burst Test Form**

# **Specifiction Information**

Specification(s):

QMF 0AI

ISO 7866

Minimum Burst Pressure (B/P): 497bar / 7,200psi

Specification Section(s): 10.4

- 1. Rate of pressurization may not exceed 200psi per second throughout entire pressurization.
- 2. Burst fracture must initiate in the longitudinal direction in the cylindrical portion of the cylinder. The cylinder must not fragment.

Cylinde	r Name:	580.3			
	678 cu.in			length:	658.81mm
Pressure;	Service: 20	07bar / 3000psi	Test:	311	bar / 4500psi
Serial Number (1):	GV0002764	Cast #:	RH0	Lot #:	AF759
Serial Number (2):_			v		
Serial Number (3):					
ect Information			1,42.0		
est Information			Test Date: Burst Test	Doculto	
Cylin Serial Number		Pressure (psi)			Fragmentation/ Pieces
GV0002764	Hydroed	8,249	Lowers	(DEWALL	NEVE
		1 1111111111111111111111111111111111111			
Notes:					
Notes:					
×					
		(T5) M			

Issue No: 1

Issue date: 7/13/10

In accordance CGA Pamphlet C-1

Manufacturer: Catalina Cylinders / Garden Grove

Independent Inspector: T. H. Cochrane Labs

Test Date: Day:

Day: Monday Time: 2:08 PM

17-Feb-14

Cylinder Type: S80.3 Test Station: # 4 Hydro

Test Pressure (T/P): 4500

Cylinder Serial Number	Cylinder Lot Number	Hydro Jkt Num	Actual T/P (psi)	Total Expan (cc)	Perm Expan (cc)	Ratio Perm/Tot (%)	Empty Weight (lbs)	Full Weight (lbs)	Volume Capacity (cu in)	Pass or Fail
GV0002720	AF759	1	4500	62.2	0.3	0.5	31.10	55.75	683.79	PASS
GV0002721	AF759	2	4500	62.7	0.2	0.3	31.05	55.80	686.57	PASS
GV0002722	AF759	3	4500	62.4	0.4	0.6	31.05	55.75	685.18	PASS
GV0002723	AF759	4	4500	62.8	0.0	0.0	31.00	55.75	686.57	PASS
GV0002724	AF759	5	4500	62.4	0.4	0.6	31.10	55.75	683.79	PASS
GV0002725	AF759	6	4500	62.8	0.5	0.8	31.05	55.75	685.18	PASS
GV0002726	AF759	1	4500	62.3	0.3	0.5	31.05	55.75	685.18	PASS
GV0002727	AF759	2	4500	62.6	0.0	0.0	31.00	55.75	686.57	PASS
GV0002728	AF759	3	4500	62.1	0.0	0.0	31.05	55.80	686.57	PASS
GV0002729	AF759	4	4500	62.9	0.3	0.5	31.05	55.75	685.18	PASS
GV0002730	AF759	5	4500	62.4	0.3	0.5	31.05	55.75	685.18	PASS
GV0002731	AF759	6	4500	62.6	0.1	0.2	31.05	55.75	685.18	PASS
GV0002732	AF759	1	4500	62.0	0.0	0.0	31.05	55.75	685.18	PASS
GV0002733	AF759	2	4500	62.4	0.0	0.0	31.05	55.75	685.18	PASS
GV0002734	AF759	3	4500	61.8	0.0	0.0	31.05	55.75	685.18	PASS
GV0002735	AF759	4	4500	62.5	0.0	0.0	31.10	55.75	683.79	PASS
GV0002736	AF759	5	4500	61.6	0.0	0.0	31.05	55.75	685.18	PASS
GV0002737	AF759	6	4500	62.3	0.0	0.0	31.05	55.75	685.18	PASS
GV0002738	AF759	1	4500	62.1	0.3	0.5	31.15	55.75	682.40	PASS
GV0002739	AF759	2	4500	62.2	0.0	0.0	31.05	55.85	687.95	PASS
GV0002740	AF759	3	4500	61.8	0.0	0.0	31.05	55.75	685.18	PASS
GV0002741	AF759	4	4500	62.3	0.0	0.0	31.10	55.80	685.18	PASS
GV0002742	AF759	5	4500	61.7	0.0	0.0	31.10	55.80	685.18	PASS
GV0002743	AF759	6	4500	61.8	0.0	0.0	31.05	55.70	683.79	PASS
GV0002744	AF759	1	4520	62.1	0.1	0.2	31.10	55.75	683.79	PASS
GV0002745	AF759	2	4520	62.6	0.0	0.0	31.05	55.75	685.18	PASS
GV0002746	AF759	3	4520	62.1	0.0	0.0	31.05	55.70	683.79	PASS
GV0002747	AF759	4	4520	62.6	0.2	0.3	31.20	55.75	681.02	PASS
GV0002748	AF759	5	4520	61.8	0.1	0.2	31.05	55.85	687.95	PASS
GV0002749	AF759	6	4520	62.4	0.0	0.0	31.05	55.75	685.18	PASS
GV0002750	AF759	1	4500	62.4	0.1	0.2	31.05	55.75	685.18	PASS
GV0002751	AF759	2	4500	62.8	0.0	0.0	31.05	55.80	686.57	PASS
GV0002752	AF759	3	4500	61.9	0.0	0.0	31.15	55.75	682.40	PASS
GV0002753	AF759	4	4500	62.5	0.0	0.0	31.15	55.80	683.79	PASS
GV0002754	AF759	5	4500	62.6	0.0	0.0	31.05	55.80	686.57	PASS
GV0002755	AF759	6	4500	62.4	0.0	0.0	31.10	55.80	685.18	PASS
GV0002756	AF759	1	4520	62.4	0.2	0.3	31.10	55.75	683.79	PASS
GV0002757	AF759	2	4520	62.7	0.2	0.3	31.10	55.80	685.18	PASS
GV0002758	AF759	3	4520	62.2	0.1	0.2	31.10	55.80	685.18	PASS
GV0002759	AF759	4	4520	63.1	0.4	0.6	31.10	55.80	685.18	PASS
GV0002760	AF759	5	4520	62.2	0.1	0.2	31.05	55.80	686.57	PASS
GV0002761	AF759	6	4520	62.6	0.1	0.2	31.05	55.75	685.18	PASS
	1.00	-	1020	0	w. 1	0.4	01.00	00.10	000.10	





In accordance CGA Pamphlet C-1

Manufacturer: Catalina Cylinders / Garden Grove

Test Date: Day:

17-Feb-14 Monday

Independent Inspector: T. H. Cochrane Labs

Time:

2:08 PM

Cylinder Type: \$80.3

Test Station:

#4 Hydro

Test Pressure (T/P): 4500

Cylinder Serial Number	Cylinder Lot Number	Hydro Jkt Num	Actual T/P (psi)	Total Expan	Perm Expan (cc)	Ratio Perm/Tot (%)	Empty Weight (lbs)	Full Weight (lbs)	Volume Capacity (cu in)	Pass or Fail
GV0002762	AF759	1	4500	62.3	0.2	0.3	31.10	55.75	683.79	PASS
GV0002763	AF759	2	4500	62.7	0.8	1.3	31.10	55.75	683.79	PASS
GV0002764	AF759	3	4500	62.0	0.0	0.0	31.10	55.75	683.79	PASS
GV0002765	AF759	4	4500	62.7	0.0	0.0	31.05	55.75	685.18	PASS
GV0002766	AF759	5	4500	62.2	0.1	0.2	31.05	55.75	685.18	PASS
GV0002767	AF759	6	4500	62.5	0.0	0.0	31.05	55.75	685.18	PASS
GV0002768	AF759	1	4500	62.1	0.2	0.3	31.10	55.75	683.79	PASS
GV0002769	AF759	2	4500	62.6	0.1	0.2	31.05	55.80	686.57	PASS
GV0002770	AF759	3	4500	62.0	0.0	0.0	31.10	55.75	683.79	PASS
GV0002771	AF759	4	4500	62.6	0.0	0.0	31.05	55.75	685.18	PASS
GV0002772	AF759	5	4500	61.9	0.0	0.0	31.05	55.75	685.18	PASS
GV0002773	AF759	6	4500	62.1	0.0	0.0	31.05	55.70	683.79	PASS
GV0002774	AF759	1	4500	61.9	0.1	0.2	31.05	55.70	683.79	PASS
GV0002775	AF759	2	4500	62.4	0.0	0.0	31.05	55.70	683.79	PASS
GV0002776	AF759	3	4500	61.5	0.0	0.0	31.05	55.75	685.18	PASS
GV0002777	AF759	4	4500	62.5	0.0	0.0	31.05	55.70	683.79	PASS
GV0002778	AF759	5	4500	61.6	0.0	0.0	31.10	55.70	682.40	PASS
GV0002779	AF759	6	4500	61.6	0.0	0.0	31.05	55.75	685.18	PASS
GV0002780	AF759	1	4500	61.9	0.0	0.0	31.05	55.75	685.18	PASS
GV0002781	AF759	2	4500	62.3	0.0	0.0	31.10	55.75	683.79	PASS
GV0002782	AF759	3	4500	62.2	0.0	0.0	31.05	55.80	686.57	PASS
GV0002783	AF759	4	4500	62.4	0.0	0.0	31.05	55.70	683.79	PASS
GV0002784	AF759	5	4500	61.7	0.0	0.0	31.05	55.70	683.79	PASS
GV0002785	AF759	6	4500	62.2	0.0	0.0	31.00	55.75	686.57	PASS
GV0002786	AF759	1	4500	61.8	0.0	0.0	31.05	55.70	683.79	PASS
GV0002787	AF759	2	4500	62.3	0.0	0.0	31.05	55.70	683.79	PASS
GV0002788	AF759	3	4500	61.6	0.0	0.0	31.00	55.75	686.57	PASS
GV0002789	AF759	4	4500	62.4	0.0	0.0	31.05	55.75	685.18	PASS
GV0002790	AF759	5	4500	61.5	0.0	0.0	31.05	55.70	683.79	PASS
GV0002791	AF759	6	4500	61.8	0.0	0.0	31.05	55.70	683.79	PASS
GV0002792	AF759	1	4500	61.8	0.0	0.0	31.05	55.70	683.79	PASS
GV0002793	AF759	2	4500	62.4	0.0	0.0	31.05	55.75	685.18	PASS
GV0002794	AF759	3	4500	61.8	0.0	0.0	31.05	55.75		PASS
GV0002795	AF759	4	4500	62.3	0.0	0.0	31.05	55.85	687.95	PASS
GV0002796	AF759	5	4500	61.3	0.0	0.0	31.20	55.70	679.63	PASS
GV0002797	AF759	6	4500	61.9	0.0	0.0	31.05	55.75	685.18	PASS
GV0002798	AF759	1	4500	61.8	0.1	0.2	31.10	55.75	683.79	PASS
GV0002799	AF759	2	4500	62.5	0.0	0.0	31.10	55.70	682.40	PASS
GV0002800	AF759	3	4500	61.8	0.0	0.0	31.05	55.80	686.57	PASS
GV0002801	AF759	4	4500	62.2	0.0	0.0	31.15	55.75	682.40	PASS
GV0002802	AF759	5	4500	61.5	0.0	0.0	31.05	55.70	683.79	PASS
GV0002803	AF759	6	4500	62.1	0.0	0.0	31.05	55.70	683.79	PASS





In accordance CGA Pamphlet C-1

Manufacturer: Catalina Cylinders / Garden Grove

Test Date:

17-Feb-14

Independent Inspector: T. H. Cochrane Labs

Day: Time:

Monday 2:08 PM

Cylinder Type: \$80.3

Test Station:

#4 Hydro

Test Pressure (T/P): 4500

Cylinder Serial Number	Cylinder Lot Number	Hydro Jkt Num	Actual T/P (psi)	Total Expan (cc)	Perm Expan (cc)	Ratio Perm/Tot (%)	Empty Weight (lbs)	Full Weight (lbs)	Volume Capacity (cu in)	Pass or Fail
GV0002804	AF759	1	4500	62.2	0.1	0.2	31.05	55.70	683.79	PASS
GV0002805	AF759	2	4500	62.5	0.0	0.0	31.05	55.70	683.79	PASS
GV0002806	AF759	3	4500	61.9	0.0	0.0	31.00	55.75	686.57	PASS
GV0002807	AF759	4	4500	62.4	0.0	0.0	31.05	55.70	683.79	PASS
GV0002808	AF759	5	4500	61.8	0.0	0.0	31.05	55.70	683.79	PASS
GV0002809	AF759	6	4500	61.7	0.0	0.0	31.10	55.70	682.40	PASS
GV0002810	AF759	1	4500	62.2	0.0	0.0	31.05	55.75	685.18	PASS
GV0002811	AF759	2	4500	62.5	0.0	0.0	31.10	55.75	683.79	PASS
GV0002812	AF759	3	4500	62.0	0.0	0.0	31.05	55.75	685.18	PASS
GV0002813	AF759	4	4500	62.3	0.0	0.0	31.05	55.75	685.18	PASS
GV0002814	AF759	5	4500	61.6	0.0	0.0	31.10	55.75	683.79	PASS
GV0002815	AF759	6	4500	62.1	0.0	0.0	31.05	55.75	685.18	PASS

In accordance CGA Pamphlet C-1

Manufacturer: Catalina Cylinders / Garden Grove

Test Date: Day: 18-Feb-14

Independent Inspector: T. H. Cochrane Labs

Time:

Tuesday 4:53 AM

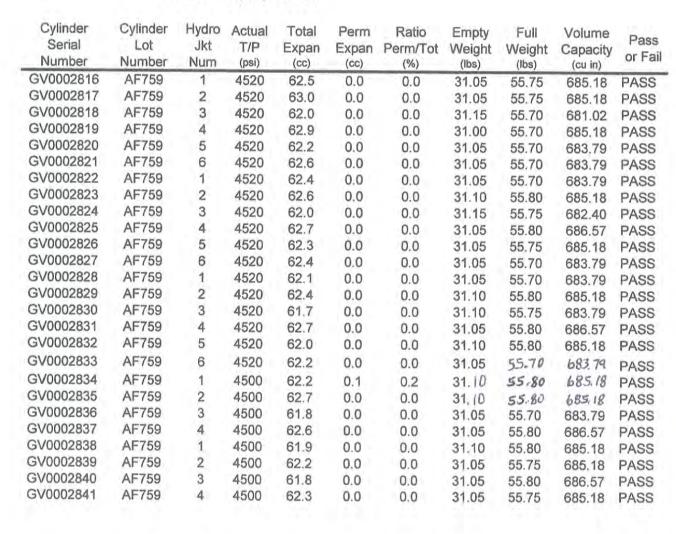
Cylinder Type: \$80.3

Test Station:

#4 Hydro

Test Pressure (T/P):

4500









# **Record Of Mechanical Property Testing**

Independent Inspection Agency: T.H. Cochrane Laboratory, Ltd(IA03) Manufacturer: Catalina Cylinders / Garden Grove, CA Facility (M4002)

HT Lot#

AF759

Friday, February 14, 2014 11:47 AM

Cylinder Type

**AS80** 

Cast #

RH0

Crosshead Speed 0.11

in/min

Material:

6061

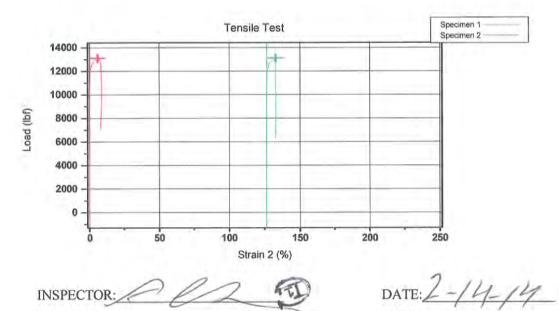
Specimens tested:

Hardness

	degree		-	20.025
Crus	sh Test	Pass	V	Fail
			10	

0 degree Pass Fail

	Thickness (in)	Width (in)	Area (in^2)	YTS-Load (lbf)	YTS (psi)	UTS-load (lbf)	UTS (psi)	%e (%)	
1	0.512	0.497	0.2545	10384.7	40810.3	13107.1	51508.5	28.9	
2	0.517	0.499	0.2580	12549.9	48646.3	13097.7	50769.5	18.0	



INSPECTOR

Page 1 of 1

# Certificat d'analyse / Certificate of Analysis

SHA

Page: 1/6

Expédié à / Ship to : Ref. client / CustomerRef. : DIVISION OF ALUMINUM PRECISION PRODUCTS CATALINA CYLINDERS 7300 ANACONDA AVE R50441 Commande Rio Tinto Alcan / Rio Tinto Alcan Order Vendu à / Sold to 6150 PARKLAND BLVD., SUITE 200 415-0316607-1 ALCAN PRIMARY PRODUCTS COMPANY LLC Point d'origine / Point of Origin Connaissement / Bill of Lading: Date d'exp. / Shipping Date: Rio Tinto Alcan Inc. **G9N 6W4** Québec, Canada Shawinigan 1100 Boul. St-Sacrement USINE SHAWINIGAN

CLEVELAND, OH 44124-4185

92841

GARDEN GROVE

CA, United States

Équipement / Equipment : Dimension: Produit / Product : Alliage (AA) / Alloy (AA) :

Liste d'exp. / Shiplist: 69276 Aluminum Extrusion Ingot 184 MM DIA. X 5486 MM LONG 7.25 IN DIA, X 216 IN LONG 326-099796-080882 ICG 978830 2013-06-04 (6061) 80882

Bundles:		13490401B		13490401B		13490401A		No d'échantil Sample N											
33	(		_	/		1		1	1	2	×	)	. ,			ر		No d'échantillon de coulée Sample No of Drop	Ana
Poids net: Net Weight:	000000	8280586	)			8280585	(	8280584	1	8280583	1	8280582		8280581	(	8280580		No Lot	alyse =n % du poi
EB KG	4,004	2 352				2,351		2,352		2,352		2,352		2,352		2,351	6	Poids net (KG)	Analyse n % du poids / Analysis in % of weight
76,792 169,297	0,100					5,183		5,185		5,185		5,185		5,185		5,183	gir (ac)	Poids net (LB)	veight
Pieces :	0			2		4		6		6		6		6		o o		Pièces	
196	0.000	0.80	0.000	0.60	0,000	0.61	0,000	0.61	0.000	0.61	0,000	0.61	0.000	0.61	0.000	0.61		Pb	S
Tare:	 0.000	0 17	0.000	0.17	0.000	0.17	0.000	0.17	0.000	0.17	0.000	0.17	0.000	0.17	0.000	0.17		Sn	Fe
 E ₹6	0.01	0 24		0.31		0.31		0.31		0.31		0.31		0.31		0.31			Сп
u,	20.0	3		0.02		0.02		0.02		0.02		0.02		0.02		0.02			Mn
678 1,495	0.81	2		0.91		0.92		0.92		0.92		0.92		0.92		0.92			Mg
Poids brut : Gross Weight	0.0/4		-	0.074		0.076		0.076		0.076		0.076		0.076		0.076			Cr
ut:	0.00		0.00	0.00		0.00		0.00		0.00		0.00		0.00		0.00			Zn
E &	0.01		0.0	0.01		0.01	-	0.01		0.01		0.01		0.01		0.01			=
77,470	0,000		0.000	0,000		0.000		0.000		0.000		0.000		0.000		0,000			<u>B</u> :
77,470 70,792	 0.01		0.01	2		0.01		0.01		0.01	1	0.01		0.01		0.01			Ga

LES LINGOTS TRI-LOX 224G, LES LINGOTS EN FORME DE T, LES GUEUSES, LES LINGOTS DE LAMINAGE MIS AU REBUT ET AUTRES LINGOTS DE REFUSION ONT TENDANCE À FORMER DES CANTIESS SUCETIBLES DEMPSIONMERS OF LEAU, POUR ELINMINER L'HUNDITÉ AUANT LEUR EUPLOI DANS TOUT PROCÉDÉ DE FUSION ET POUR PRÉVENIR LES RISCUES DEXPLOSANL LES LINGOTS DEVEAUNT EIR SOUMIS ALUN SÉCHAGE MIELSIS PAR CHAUNTER, LEUR EUPLOI DANS TOUT PROCÉDÉ DE FUSION ET POUR PRÉVENIR LES TRILLOX 21/65 MAOT TELE MACOT POUR PRÉVENIR LES TRILLOX 21/65 MAOT TO LES MEDITORIS DE L'ALUN DE L'ALUN PRINCIPAL DE L'ALUN PR

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L'EXACTITUDE DE CES ANALYSES EST DANS LES NORMES DES LIMITES COMMERCIALES.

THE ANALYSES HERE ARE ACCURATE WITHIN COMMERCIAL LIMITS. / Michel Caron

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J.Q Voc. 683.79 CU.I.N.