

TOOLS FOR WILLEMIN- MACODEL 701S



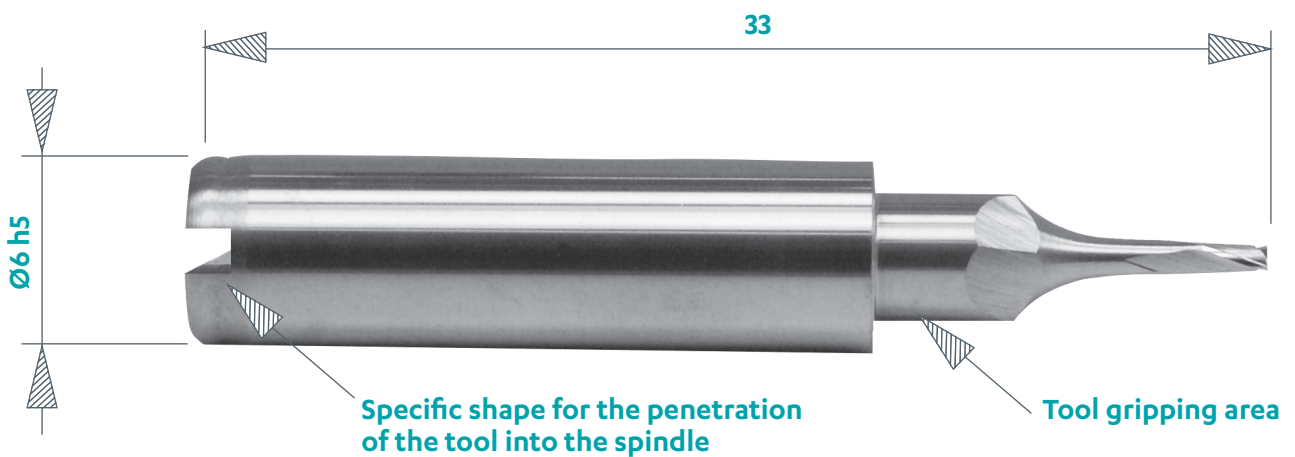
THE TOOLS OF THE REVOLUTION

Louis Bélet SA was Willemin-Macodel's first partner in the development of tools for the revolutionary 701S machining center.

This machine, based on a delta architecture, has a dynamics and rigidity far superior to current standards, which has required the development of specific tools.

General shape of the tool

The tools are not clamped but are placed in a circular cassette. An automatic loader picks them up and puts them directly into the machine spindle. An innovation that had a direct impact on the overall shape of the tool:



Balanced tools

The 80,000 rpm spindle allows high-speed machining (HSC) even with small tools. Balanced tools are needed to prevent vibrations and poor surface quality.

Perform multiple machining operations with a single tool

The dynamics and precision of the 701S allow very fast circular paths with sub-micron accuracy. The drilling with a milling cutter then becomes faster and offers a better hole quality.

The milling cutter references 7010 and 7010C01 are tools specifically dedicated to the combination of milling and drilling machining by helical interpolation.

REF. 7010



solid carbide

REF. 7010C01



ceramic

Tools in multiple materials

The various applications of the 701S have led Louis Bélet to create tools in different materials in order to guarantee maximum productivity.

In addition to hard metal, PCD is also frequently used in the processing of non-ferrous materials.



PCD



ceramic

The ceramic micro milling cutters were initially developed for the 701S. The rigidity of the machine allows the use of these cutters and the tool life becomes impressive.

Another advantage is that the ceramic hardly wears out, so the surface finish of the machined parts is constant from the first to the last.

All types of tools are possible

End mills, drills, scrapers, engravers, whirling tools ...

End mill



Drill



Whirling tool



Scraper



Engraver



Louis Bélet at the disposal of its customers

A new material to machine, a complicated part or a difficult machining?

Louis Bélet's technical teams are there to support and develop the customer in a mutual partnership.

REF. 7010 End mill for 701S



REF. 7111-1 Straight cut end mill Z1 for 701S



REF. 7119 Engraving mill for 701S



REF. 7111-3 Straight cut end mill Z3 for 701S



REF. 74119-3 Engraving mill in PCD for 701S



REF. 7010C01 Ceramic end mill for 701S



REF. 7339 Twist drill helix 24° for 701S



REF. 71820C01 Ceramic end mill EXPERT brass for 701S



REF. 7102 Micro end mill Z2 for 701S



Any other geometry upon request



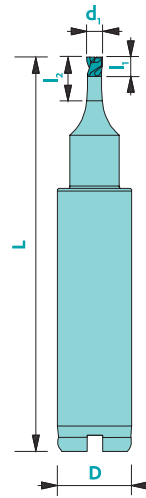
End mill for 701S machine Willemin-Macodel

7010

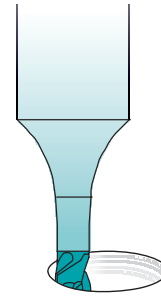
Material	Vc uncoated	Vc coated	Uncoated	Coated	Rec. Coating*
Steel < 700 N/mm ²	100	130	□	□	Tisi (BS)
Steel > 700 N/mm ²	80	100	□	□	Tisi (BS)
Stainless steel	50	70	□	■	Tisi (BS)
Cast iron	60	100	□	□	Tisi (BS)
Copper	150	180	□	□	Solo (DA)
Brass - Bronze	150	180	■	■	Solo (DA)
Aluminium	200	350	□	□	Rico(ZB)/Solo(DA)
Gold - Silver	140	180	□	□	Solo (DA)
Platinum - Palladium	-	35	-	□	Solo (DA)
Superalloys	-	40	-	□	Tisi (BS)
Titanium	40	60	□	□	Rico(ZB)/Trio(PO)

not adapted - adapted □ highly adapted ■

Tolerances $d_1 \leq 1 \text{ mm: } +0/-0.01$ $D: h5$
 $d_1 > 1 \text{ mm: } +0/-0.02$



Art. n°	d_1	l_1	l_2	D	L
7010d0.10	0.10	0.05	0.40	6	33
7010d0.20	0.20	0.10	0.80	6	33
7010d0.32	0.32	0.16	1.28	6	33
7010d0.50	0.50	0.25	2.00	6	33
7010d0.63	0.63	0.32	2.52	6	33
7010d0.80	0.80	0.40	3.20	6	33
7010d1.25	1.25	0.63	5.00	6	33
7010d2.00	2.00	1.00	-	6	33
7010d3.20	3.20	1.60	-	6	33



ideal for drilling by helical interpolation

Available uncoated or coated



Z2



λ
20°

γ
8-10°

CARB

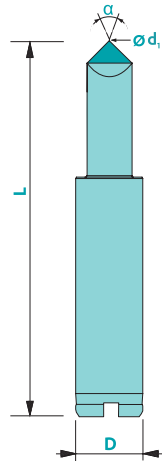
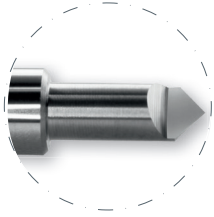


$a_p = 0.24x d_1$

$a_e = 0.8x d_1$
 $a_p = 0.3x d_1$

7119

Engraving mill for 701S machine Willemin-Macodel



Material	Vc uncoated	Vc coated	Uncoated	Coated	Rec. Coating*
Steel < 700 N/mm ²	25 - 40'000	0.05 - 0.40	□	■	Tisi (BS)
Steel > 700 N/mm ²	20 - 40'000	0.05 - 0.30	-	■	Tisi (BS)
Stainless steel	20 - 30'000	0.05 - 0.30	-	■	Tisi (BS)
Cast iron	25 - 40'000	0.05 - 0.40	□	■	Tisi (BS)
Copper	20 - 40'000	0.05 - 0.40	□	■	Solo (DA)
Brass - Bronze	25 - 40'000	0.05 - 0.40	□	■	Solo (DA)
Aluminium	-	-	□	■	-
Gold - Silver	20 - 40'000	0.05 - 0.40	■	□	Solo (DA)
Platinum - Palladium	-	-	-	-	-
Superalloys	-	-	□	■	-
Titanium	25 - 40'000	0.05 - 0.40	■	□	RICO (ZB)

not adapted - adapted □ highly adapted ■

Tolerances d_1 : +/- 0.01
D: h5

Available uncoated or coated



Z1



CARB

Article number: 7119a##d#.##

Example: End mill ref. 7119 with 25° angle and tip diameter 0.05 mm: 7119a25d0.05

α	d_1	D	L
15°-45°	0.02-0.09	6	33
15°-45°	0.10-0.30	6	33
50°-140°	0.02-0.09	6	33
50°-140°	0.10-0.30	6	33

* Available angles: every 5° between 15° and 45°; every 10° between 50° and 140°

** Available diameters: every 0.01 mm between 0.02 and 0.09 mm; every 0.05 mm between 0.10 and 0.30 mm

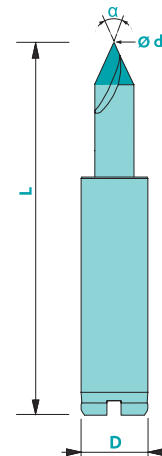
Other dimensions (angle, tip diameter, shank) upon request

Engraving mill in PCD for 701S machine Willemin-Macodel

74119-3

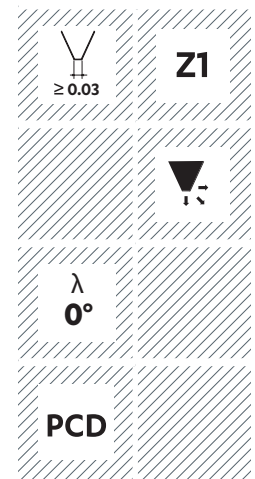
Material	n [rpm]	Ap	Perf.
Steel < 700 N/mm ²	-	-	-
Steel > 700 N/mm ²	-	-	-
Stainless steel	-	-	-
Cast iron	-	-	-
Copper	≥ 40'000	0.05 - 0.40	■
Brass - Bronze	≥ 40'000	0.05 - 0.40	■
Aluminium	≥ 40'000	0.05 - 0.40	■
Gold - Silver	≥ 40'000	0.05 - 0.40	■
Platinum - Palladium	≥ 40'000	0.05 - 0.40	■
Superalloys	-	-	-
Titanium	-	-	-

not adapted - adapted highly adapted



Tolerances d_1 : +/- 0.01
D: h5

Art. n°	α	d_1	D	L
74119-3a40d0.05	40	0.05	6	33
74119-3a40d0.08	40	0.08	6	33
74119-3a40d0.10	40	0.10	6	33
74119-3a50d0.05	50	0.05	6	33
74119-3a50d0.08	50	0.08	6	33
74119-3a50d0.10	50	0.10	6	33
74119-3a60d0.05	60	0.05	6	33
74119-3a60d0.08	60	0.08	6	33
74119-3a60d0.10	60	0.10	6	33
74119-3a70d0.05	70	0.05	6	33
74119-3a70d0.08	70	0.08	6	33
74119-3a70d0.10	70	0.10	6	33
74119-3a90d0.05	90	0.05	6	33
74119-3a90d0.08	90	0.08	6	33
74119-3a90d0.10	90	0.10	6	33



Order Quotation request

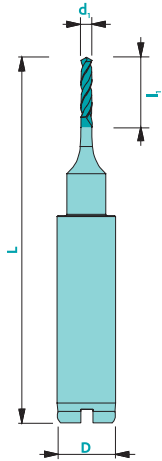
Angle (0): <input type="checkbox"/> By default : 60° <input type="checkbox"/> 30° <input type="checkbox"/> 35° <input type="checkbox"/> 45° <input type="checkbox"/> Other : _____ <input type="checkbox"/> 50° <input type="checkbox"/> 55° <input type="checkbox"/> 90°		Order No : _____
Machined material : _____	Quantity : _____	d_1 (from 0.02 mm) : _____
Contact person : _____		Company's stamp & date : _____

Standard dimensions of the bars : \varnothing 3x L 38, \varnothing 4x L 38, \varnothing 6x L 38, \varnothing 6x L 51, \varnothing 8x L 61, \varnothing 10x L 72, \varnothing 12x L 83, \varnothing 16x L 92, \varnothing 20x L 104

Other dimensions, CVD/CBN available upon request.

7339

Twist drill helix 24° for 701S machine Willemin-Macodel



Material	Vc uncoated	Vc coated	Uncoated	Coated	Rec. Coating*
Steel < 700 N/mm ²	60	70	□	■	Nemo (NO)
Steel > 700 N/mm ²	50	60	□	■	Nemo (NO)
Stainless steel	40	50	□	■	Nemo (NO)
Cast iron	30	40	□	■	Solo (DA)
Copper	50	60	□	■	Solo (DA)
Brass - Bronze	120	130	■	□	Solo (DA)
Aluminium	130	140	□	■	Nemo (NO)
Gold - Silver	80	90	■	□	Solo (DA)
Platinum - Palladium	-	18	-	■	Solo (DA)
Superalloys	-	20	-	■	Nemo (NO)
Titanium	30	40	□	■	Nemo (NO)

not adapted - adapted □ highly adapted ■

Tolerances d₁: -0.002/-0.004
D: h5

Available uncoated or coated



118°

Z2



λ
24°

CARB

Art. n°	d ₁	l ₁	D	L
7339d0.230	0.230	1.0	6	33
7339d0.275	0.275	1.0	6	33
7339d0.320	0.320	1.5	6	33
7339d0.400	0.400	2.0	6	33
7339d0.480	0.480	3.0	6	33
7339d0.560	0.560	4.0	6	33
7339d0.640	0.640	4.0	6	33
7339d0.720	0.720	4.0	6	33
7339d0.800	0.800	4.0	6	33
7339d1.000	1.000	4.0	6	33
7339d1.150	1.150	4.0	6	33

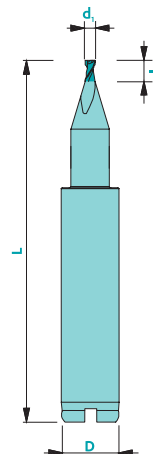
Micro end mill Z2 for 701S machine Willemin-Macodel

7102

Material	Vc uncoated	Vc coated	Uncoated	Coated	Rec. Coating*
Steel < 700 N/mm ²	100	130	□	□	Tisi (BS)
Steel > 700 N/mm ²	80	100	□	□	Tisi (BS)
Stainless steel	50	70	□	■	Tisi (BS)
Cast iron	60	100	□	□	Tisi (BS)
Copper	150	180	□	□	Solo (DA)
Brass - Bronze	150	180	■	■	Solo (DA)
Aluminium	200	350	□	□	Rico(ZB)/Solo(DA)
Gold - Silver	140	180	□	□	Solo (DA)
Platinum - Palladium	-	35	-	□	Solo (DA)
Superalloys	-	40	-	□	Tisi (BS)
Titanium	40	60	□	□	Rico(ZB)/Trio(PO)

not adapted - adapted □ highly adapted ■

Tolerances $d_1 \leq 1$ mm: 0/-0.01
 $d_1 > 1$ mm: 0/-0.02 D: h5



Art. n°	d_1	l_1	D	L
7102d0.10l0.10	0.10	0.10	6	33
7102d0.20l0.30	0.20	0.30	6	33
7102d0.25l0.75	0.25	0.75	6	33
7102d0.32l0.48	0.32	0.48	6	33
7102d0.40l0.80	0.40	0.80	6	33
7102d0.40l1.60	0.40	1.60	6	33
7102d0.50l0.75	0.50	0.75	6	33
7102d0.63l1.89	0.63	1.89	6	33
7102d0.80l1.60	0.80	1.60	6	33
7102d0.80l3.20	0.80	3.20	6	33
7102d1.25l2.50	1.25	2.50	6	33
7102d1.60l4.00	1.60	4.00	6	33
7102d2.00l2.50	2.00	2.50	6	33
7102d2.50l3.00	2.50	3.00	6	33
7102d3.20l3.20	3.20	3.20	6	33

Available uncoated or coated



Z2



λ
35°

γ
8-10°

CARB



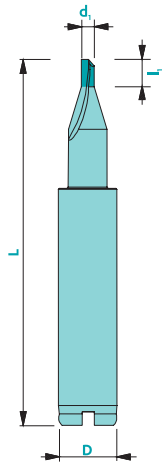
$ap=0.25xd_1$



$ae=0.5xd_1$
 $ap=0.5xd_1$

7111-1

Straight cut end mill Z1 for 701S machine Willemin-Macodel



Material	Vc uncoated	Vc coated	Uncoated	Coated	Rec. Coating*
Steel < 700 N/mm ²	-	60	-	■	Trio (PO)
Steel > 700 N/mm ²	-	-	-	-	-
Stainless steel	-	-	-	-	-
Cast iron	-	-	-	-	-
Copper	-	-	-	-	-
Brass - Bronze	80	110	■	■	Solo (DA)
Aluminium	-	-	-	-	-
Gold - Silver	50	60	■	■	Solo (DA)
Platinum - Palladium	-	-	-	-	-
Superalloys	-	-	-	-	-
Titanium	20	30	■	■	Rico (ZB)

not adapted - adapted ■ highly adapted ■

Tolerances $d_1 \leq 1$ mm: 0/-0.01 $d_1 > 1$ mm: 0/-0.02 D: h5

Available uncoated or coated



Z1



λ
0°

γ
0°

CARB



$ap=0.5xd_1$



$ae=0.5xd_1$
 $ap=0.5xd_1$

Art. n°	d_1	l_1	D	L
7111-1d0.63	0.63	1.89	6	33
7111-1d0.80	0.80	3.20	6	33
7111-1d1.25	1.25	2.50	6	33
7111-1d1.60	1.60	4.00	6	33
7111-1d2.00	2.00	2.50	6	33
7111-1d2.50	2.50	3.00	6	33
7111-1d3.20	3.20	3.20	6	33

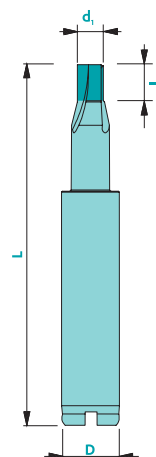
Straight cut end mill Z3 for 701S machine Willemin-Macodel

7111-3

Material	Vc uncoated	Vc coated	Uncoated	Coated	Rec. Coating*
Steel < 700 N/mm ²	-	60	-	■	Trio (PO)
Steel > 700 N/mm ²	-	-	-	-	-
Stainless steel	-	-	-	-	-
Cast iron	-	-	-	-	-
Copper	-	-	-	-	-
Brass - Bronze	80	110	■	■	Solo (DA)
Aluminium	-	-	-	-	-
Gold - Silver	50	60	■	■	Solo (DA)
Platinum - Palladium	-	-	-	-	-
Superalloys	-	-	-	-	-
Titanium	20	30	■	■	Rico (ZB)

not adapted - adapted ■ highly adapted ■

Tolerances $d_1 \leq 1$ mm: 0/-0.01 $D: h5$
 $d_1 > 1$ mm: 0/-0.02



Art. n°	d_1	l_1	D	L
7111-3d0.63	0.63	1.89	6	33
7111-3d0.80	0.80	3.20	6	33
7111-3d1.25	1.25	2.50	6	33
7111-3d1.60	1.60	4.00	6	33
7111-3d2.00	2.00	2.50	6	33
7111-3d2.50	2.50	3.00	6	33
7111-3d3.20	3.20	3.20	6	33

Available uncoated or coated

Z3



λ 0° γ 0°

CARB

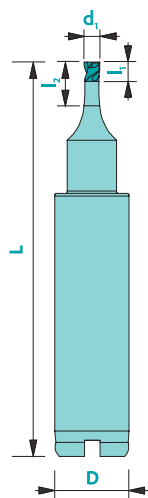


$a_p = 0.25 \times d_1$

$a_e = 0.5 \times d_1$
 $a_p = 0.5 \times d_1$

7010C01

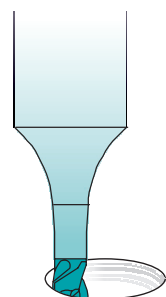
Ceramic end mill for 701S machine Willemin-Macodel



Material	Vc uncoated	Vc coated	Uncoated	Coated	Rec. Coating*
Steel < 700 N/mm ²	-	-	-	-	-
Steel > 700 N/mm ²	-	-	-	-	-
Stainless steel	-	-	-	-	-
Cast iron	-	-	-	-	-
Copper	200	-	■	-	-
Brass - Bronze	150-500	-	■	-	-
Aluminium	250	-	■	-	-
Gold - Silver	100-200	-	■	-	-
Platinum - Palladium	-	-	-	-	-
Superalloys	-	-	-	-	-
Titanium	-	-	-	-	-

not adapted - adapted ■ highly adapted ■

Tolerances $d_1 \leq 1 \text{ mm}$: +0/-0.01 D : h5
 $d_1 > 1 \text{ mm}$: +0/-0.02



ideal for drilling by helical interpolation

Available uncoated



Z2



C01



$ap=0.24xd_1$



$ae=0.8xd_1$
 $ap=0.3xd_1$

Art. n°	d_1	l_1	l_2	D	L
7010C01d0.10	0.10	0.05	0.40	6	33
7010C01d0.20	0.20	0.10	0.80	6	33
7010C01d0.32	0.32	0.16	1.28	6	33
7010C01d0.50	0.50	0.25	2.00	6	33
7010C01d0.63	0.63	0.32	2.52	6	33
7010C01d0.80	0.80	0.40	3.20	6	33
7010C01d1.25	1.25	0.63	5.00	6	33
7010C01d2.00	2.00	1.00	-	6	33
7010C01d3.20	3.20	1.60	-	6	33

Ceramic end mill EXPERT brass for 701S machine Willemin-Macodel

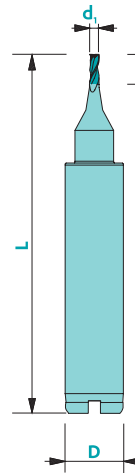


71820C01

Material	Vc uncoated	Vc coated	Uncoated	Coated	Rec. Coating*
Composite	-	-	-	-	-
Steel < 700 N/mm ²	-	-	-	-	-
Steel > 700 N/mm ²	-	-	-	-	-
Stainless steel	-	-	-	-	-
Cast iron	-	-	-	-	-
Copper	-	-	-	-	-
Brass - Bronze	150-500	-	■	-	-
Aluminium	-	-	-	-	-
Gold - Silver	100-200	-	■	-	-
Platinum - Palladium	-	-	-	-	-
Superalloys	-	-	-	-	-
Titanium	-	-	-	-	-

not adapted - adapted ■ highly adapted ■

Tolerances $d_1 \leq 1 \text{ mm} \rightarrow 0/-0.01$ D: h5
 $d_1 > 1 \text{ mm} \rightarrow 0/-0.02$



Art. n°	d_1	l_1	D	L
71820C01d0.50	0.50	1.00	6	33
71820C01d0.80	0.80	1.60	6	33
71820C01d1.00	1.00	2.00	6	33
71820C01d1.50	1.50	3.00	6	33
71820C01d2.00	2.00	4.00	6	33
71820C01d3.00	3.00	5.00	6	33

Available uncoated



λ
30°

C01



$ap=0.35xd_1$

$ae=0.5xd_1$
 $ap=0.5xd_1$

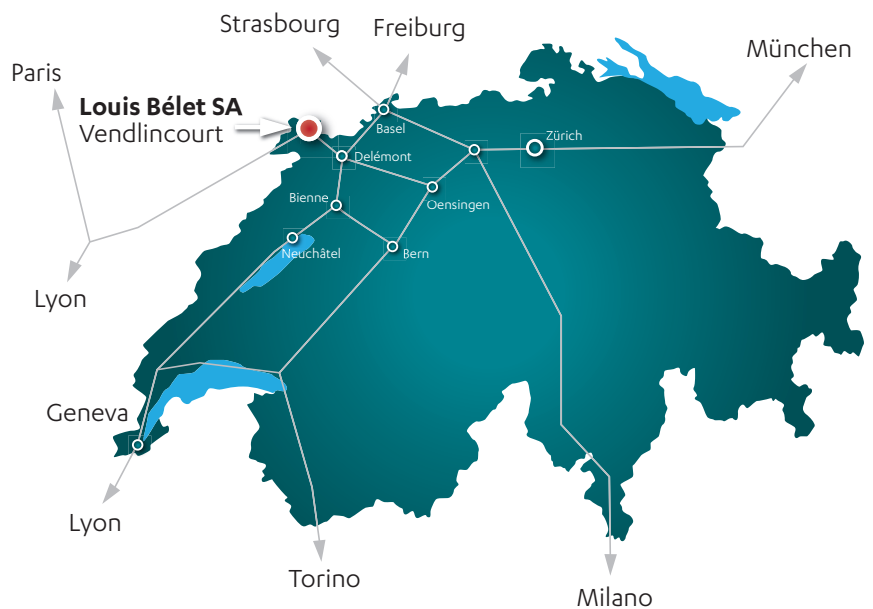


Since 1948

Louis BELET SA is a family business of about 150 employees. The company is run by the two grandchildren of the founder, Mrs Roxane Piquerez and Mr Arnaud Maître.

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**List of authorized distributors
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