

# **SOURIAU**

# Backshells & Accessories



### Backshells & Accessories

### Aluminum Backshells & Caps



#### **Presentation**

Souriau offers a full range of aluminum backshells and caps. The best choice for a global solution provider.

#### Cost & time saving

• One supplier for connector and accessories.

#### High reliability

- Conforming to AS85049 standards for backshells.
- Conforming to MIL-DTL-38999/32 & /33, MS3180 & MS3181 standards for caps.

#### A global RoHS solution

- With Zinc-Nickel accessories, Souriau offers a complete RoHS solution.
- Nickel, Cadmium and Black anodize finishes also available.

#### A wide range

- 6 backshell types and 2 angles.
- Caps for receptacle and plugs.
- Available for 38999 Series I, II, III & IV and 26482 Series I & II.

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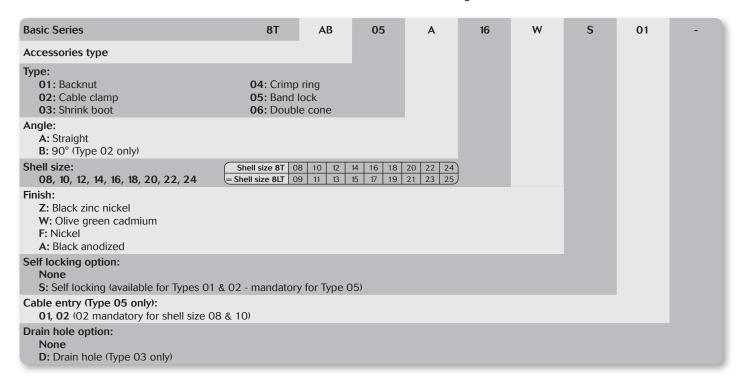
# 8LT, 8T & 8D Series Aluminum Backshells



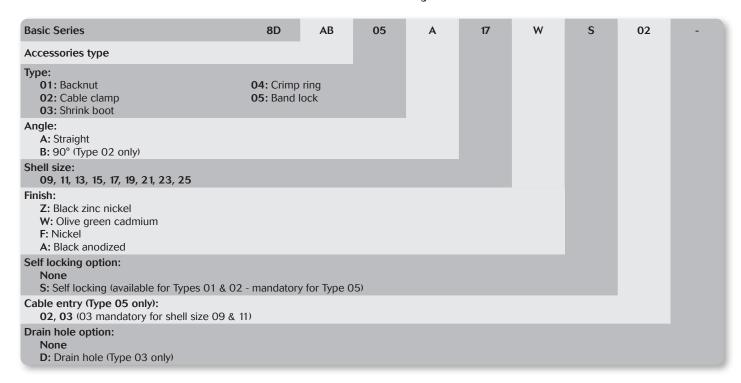
#### **Aluminum Backshells**

#### **Ordering information**

Aluminum backshells for 8LT & 8T Series - For connectors conforming to MIL-DTL-38999 Series I & II



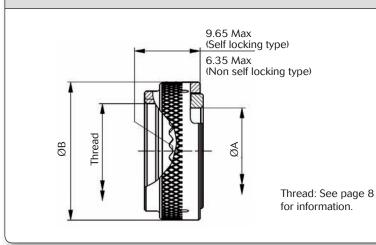
#### Aluminum backshells for 8D Series - For connectors conforming to MIL-DTL-38999 Series III & IV



#### **Aluminum Backshells**

#### **Dimensions**

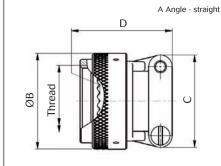
#### Aluminum backshell Type 01 - Backnut

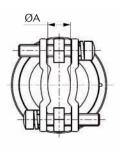


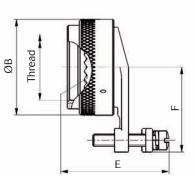
Shell size		ØA Min	ØB Max	
8LT & 8D	8T	ØA MIII	рь мах	
09	08	6.7	17.9	
11	10	9.95	20.9	
13	12	12.85	24.3	
15	14	17.0	27.9	
17	16	19.25	31.3	
19	18	21.7	35.3	
21	20	24.7	38.1	
23	22	27.8	41.5	
25	24	32.0	44.5	

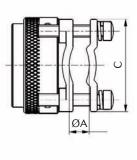
B Angle - 90°

### Aluminum backshell Type 02 - Cable clamp\*









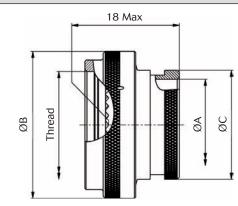
	Thread:	See	page	8	for	information
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Shell	size	Ø	A	ØB Max	CMay	D Max	E Max	F Max
8LT & 8D	8T	Min	Max	ØD MdX	C Max	D Max	E Max	r MdX
09	80	2.49	5.94	17.9	21.5	23.1	29.5	20
11	10	3.89	5.94	20.9	21.5	23.1	29.5	21.5
13	12	4.83	8.33	24.3	24.5	25.6	31.5	23.5
15	14	6.60	11.61	27.9	27.5	26.9	35.8	25.5
17	16	7.19	15.6	31.3	31.5	29.4	40.1	27.5
19	18	8.26	16.1	35.3	35.5	35.8	40.6	30.5
21	20	8.71	17.73	38.1	37	38.3	42.7	31.5
23	22	9.68	20.9	41.5	40.5	42.1	46.2	34.5
25	24	10.62	21.67	44.5	45	44.7	49	36.5

<sup>\*</sup> Shapes shown in the picture are only representative. Actual shapes vary in some sizes. Note: All dimensions are in millimeters (mm)

### **Aluminum Backshells**

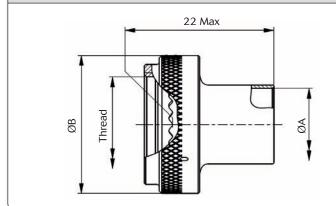
### Aluminum backshell Type 03 - Shrink boot



Shell size		ØA Min	ØB Max	C Max	
8LT & 8D	8T	WA MIII	DD Max	C Max	
09	08	6.7	19.0	11.3	
11	10	9.95	21.5	14.9	
13	12	12.85	25.3	17.8	
15	14	16.05	29.1	21.27	
17	16	19.2	31.7	24.3	
19	18	21.5	35.5	26.4	
21	20	24.7	39.3	30.8	
23	22	27.8	41.8	34.1	
25	24	31	46.9	36.6	

Thread: See page 8 for information.

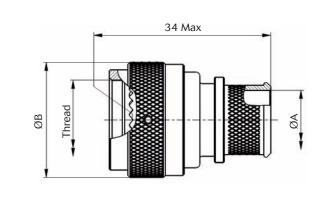
#### Aluminum backshell Type 04 - Crimp ring



Shell size		ØA Min	ØB Max
8LT & 8D	8T	DA MIII	DD Max
09	08	6	17.9
11	10	8.2	20.9
13	12	10.5	24.3
15	14	13.6	27.9
17	16	16.9	31.3
19	18	20	34.3
21	20	23.2	38.1
23	22	26.1	41.5
25	24	28.1	44.4

Thread: See page 8 for information.

#### Aluminum backshell Type 05 - Band lock

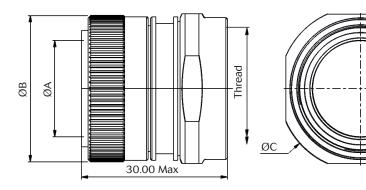


Shell size		ØA Max -	`	
8LT & 8D	8T	01 (8LT & 8T) 02 (8D)	02 (8LT & 8T) 03 (8D)	ØB Max
09	08	-	6.6	17.9
11	10	-	8	24.9
13	12	8	11.2	29.3
15	14	11.2	14.4	32.4
17	16	12.8	16	35.6
19	18	16	19.1	38.4
21	20	16	20.7	41.6
23	22	17.6	23.9	44.8
25	24	19.1	25.5	47.9

Thread: See page 8 for information.

### Aluminum Backshells

### Aluminum backshell Type 06 - Double cone HE 308 standard - Screen termination and heat shrink boot



Shell size		ØA <sup>±0.07</sup>	ØB±0.12	ØC <sup>±0.12</sup>	D±0.07
8LT	8T	WA	<u>Ю</u> Б	ØC	D
09	08	7.1	15.55	19.35	16.7
11	10	10.25	18.45	23.35	20.7
13	12	13.05	21.85	25.35	22.7
15	14	15.25	25.05	28.35	25.7
17	16	18.45	28.05	31.35	28.7
19	18	20.65	31.05	34.35	31.7
21	20	23.85	34.45	38.35	35.7
23	22	26.95	37.45	41.35	38.7
25	24	30.15	40.75	44.35	41.7

Thread: See below for information.

#### **Thread information**

#### 8LT & 8T Series

Shell size		UNEF Thread
8LT	8T	uner illeau
09	08	7/16-28 2B
11	10	9/16-24 2B
13	12	11/16-24 2B
15	14	13/16-20 2B
17	16	15/16-20 2B
19	18	1 1/16-18 2B
21	20	1 3/16 - 18 2B
23	22	1 5/16 -18 2B
25	24	1 7/16 -18 2B

#### **8D Series**

Shell size	Metric Thread
09	M12x1.0-6H-0.10R
11	M15x1.0-6H-0.10R
13	M18x1.0-6H-0.10R
15	M22x1.0-6H-0.10R
17	M25x1.0-6H-0.10R
19	M28x1.0-6H-0.10R
21	M31x1.0-6H-0.10R
23	M34x1.0-6H-0.10R
25	M37x1.0-6H-0.10R

### **Aluminum Backshells**

### Recommended installation torque

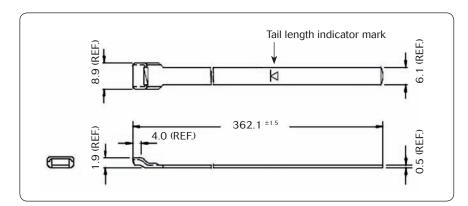
Shell Size for 8LT, 8T & 8D	Installation Torque (Inch-Pounds)		
08/09/A	40		
10/11/B	40		
12/13/C	40		
14/15/D	40		
16/17/E	40		
18/19/F	40		
20/21/G	80		
22/23/H	80		
24/25/J	80		

Note: Torque values are based on 80% of the coupling thread strength specified in SAE-AS85049 standard.

#### Shield band

Designation	Flat stainless steel standard band	Pre-coiled stainless steel standard band	Hand banding tool		
Part number	8599-9344	8599-9345	8599-9346		





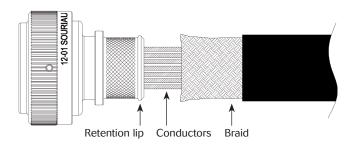
#### **Aluminum Backshells**

#### Band lock Type 05 assembly

#### Step 1: Prepare cable braid

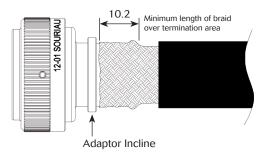
Terminate wires to connector and screw the backshell to connector. Prepare the cable for termination process.

**WARNING!** Banding must occur on an un-fixtured cable assembly. Attaching a band to a firmly clamped cable will affect the applied forces and will also interfere with the cut-off operation. The cut-off operation causes a rotation of the band termination in order to lock the band.



#### Step 2: Push braid over adaptor

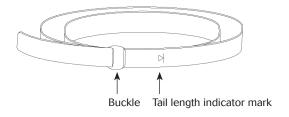
Push the braid over the retention lip to the adaptor incline point or ensuring 10.2mm [0.4"] minimum braid length over termination area. Milk the braid as required to remove the slack and insure a snug fit around the shield termination area.



#### Step 3: Prepare shield band

Roll the band through the buckle slot twice. Pull on the band until the tail length indicator mark is within approximately 6.4 mm (0.250 in) of the buckle slot. The band may be tightened further if desired.

**WARNING!** Always roll band through the buckle slot twice in order to ensure correct functioning.



#### Step 4: Install shield band

a ) Squeeze the gripper release lever of the banding tool and insert the band into the front end opening of the tool as shown on picture. **WARNING!** The circular portion of looped band must always face downward.



b ) Aligning the band and the tool with the shield termination area, squeeze the black pull-up handle repeatedly using short strokes until it locks against the tool body (this indicates that the band is compressed to the tool pre-calibrated tension).

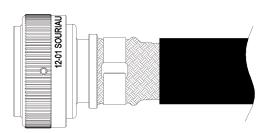
**IMPORTANT!** Operator technique can affect the integrity of the band installation. The operator should use **abbreviated** or **partial** strokes of the pull-up handle as the band is pulling up against the braid. As the band becomes completely tight, apply a full strokes of the pull-up handle to ensure that the full calibrated force of the tool is applied as the handle locks into position.

c ) Complete the clamping process by squeezing the gray cut-off handle, allowing the cable to rotate slightly during cut-off.

#### Step 5: Inspect the shield termination

Remove the excess band from the tool. Inspect shield termination. Install the heat shrinkable boot, if required.

WARNING! Tools and Bands should never be lubricated.



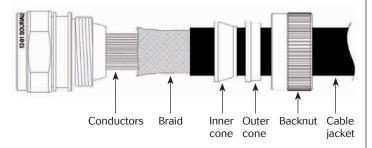
Note: All dimensions are in millimeters (mm)

#### **Aluminum Backshells**

#### Double cone Type 06 assembly

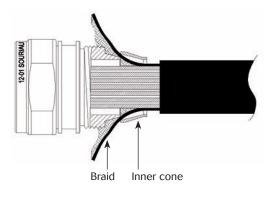
#### Step 1: Prepare cable braid

Prepare the cable for termination process and slide the backshell parts onto the cable the items in the order shown in above figure. Screw the backshell at the rear of the connector.



#### Step 2: Push braid over adaptor

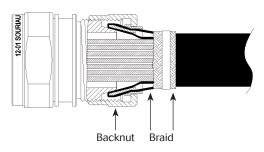
Release the braid and slide the inner cone over the braid.



#### Step 3-a: Double folding

Fold back the braid on the inner cone and fix it with an adhesive tape on to the jacket of the cable. Slide the outer cone over the braid and the inner cone. Screw the backnut at the rear of the backshell and tighten it. Install heat shrinkable boot.

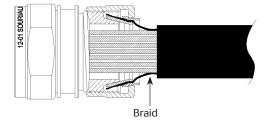
Please refer to Step 3-b for alternate method (Single folding).



#### Step 3-b: Single folding

(if Double folding is not possible)

Cut the braid as shown. Slide the outer cone over the braid and the inner cone. Screw the backnut at the rear of the backshell and tighten it. Install heat-shrinkable boot.

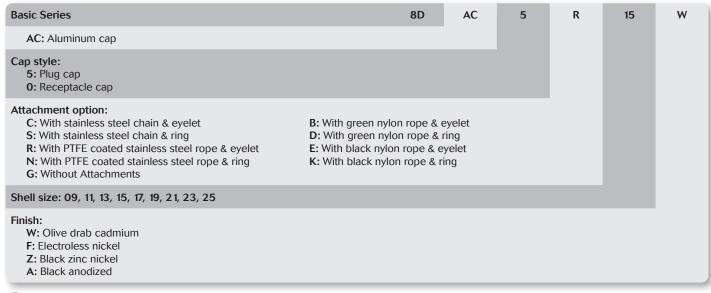


### **Aluminum Caps**



#### **Ordering information**

8D Aluminum caps SOURIAU part number - For connectors conforming to MIL-DTL-38999 Series III



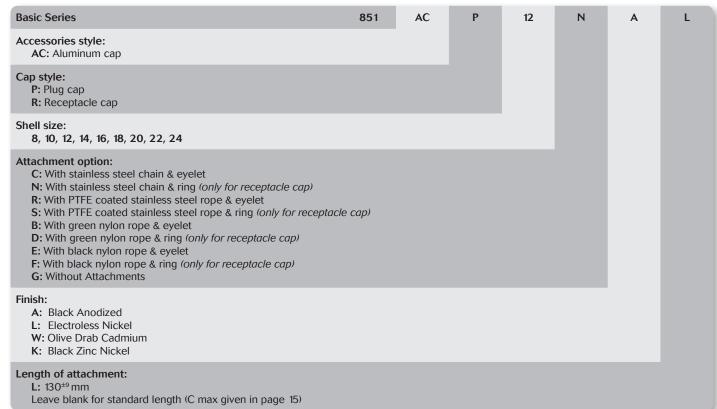
### **Aluminum Caps**

#### **Ordering information**

Aluminum caps MIL-DTL-38999 part number - For connectors conforming to MIL-DTL-38999 Series III

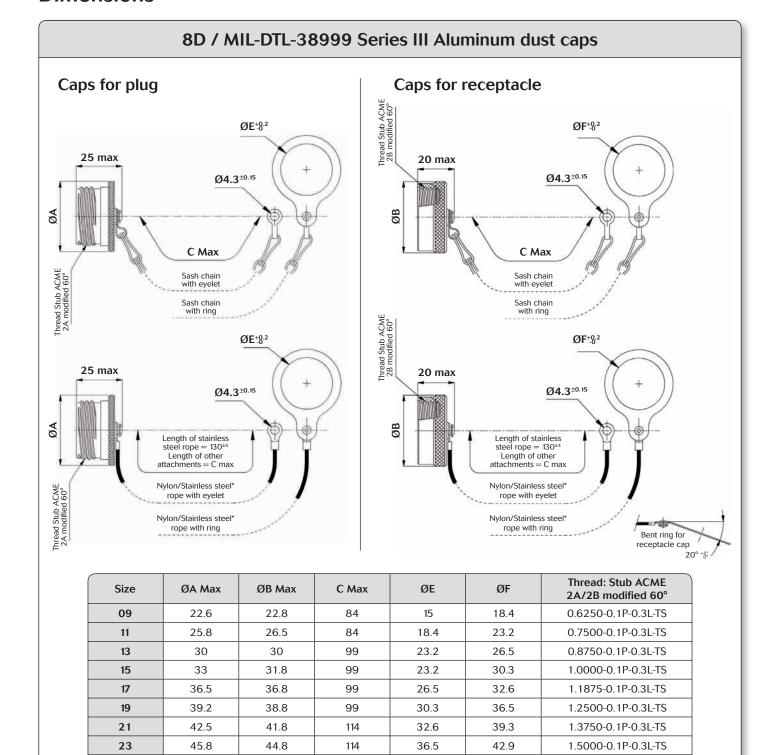
Basic Series	D38999/	32	W	09	R
Cap style: 32: Plug cap 33: Receptacle cap					
Finish: W: Olive drab cadmium F: Nickel Z: Black zinc nickel					
Shell size: 09, 11, 13, 15, 17, 19, 21, 23, 25					
Accessories:  N: With stainless steel rope and ring R: With stainless steel rope and eyelet					

#### 851 Aluminum caps SOURIAU part number - For connectors conforming to MIL-DTL-26482 Series I & II



### **Aluminum Caps**

#### **Dimensions**



25

48.9

48.8

114

39.3

45

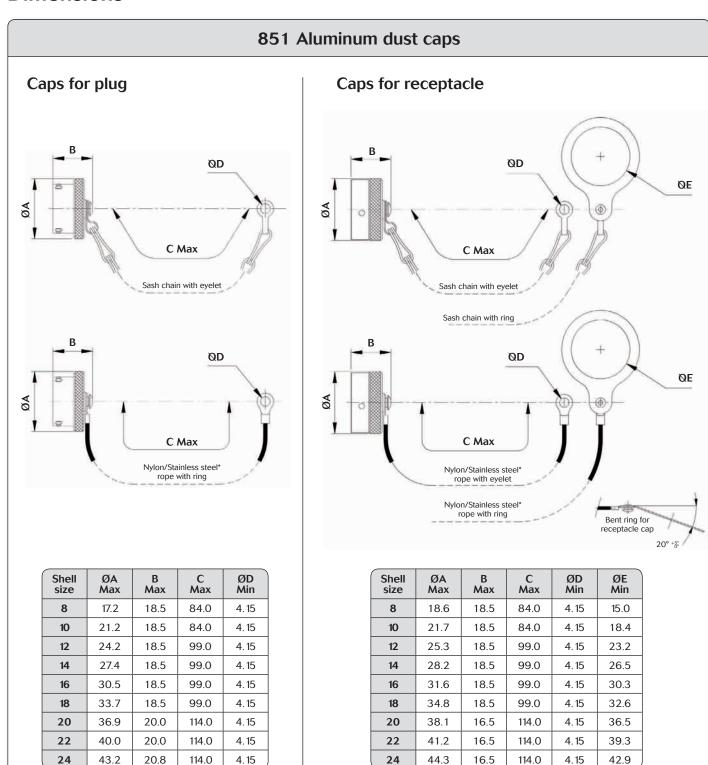
1.6250-0.1P-0.3L-TS



<sup>\*</sup> Coated with PTFE which withstands 200°C. Note: All dimensions are in millimeters (mm)

### Aluminum Caps

#### **Dimensions**



<sup>\*</sup> Coated with PTFE which withstands 200°C. Note: All dimensions are in millimeters (mm)

### Backshells & Accessories

### Aluminum Backshells & Caps

### Comparison of plating codes available on the market

Requirement		Electroless Nickel Cadmium			Zinc Nickel Black	Others			
			Cadmium	Black Anodize		Nickel PTFE		Pure Electro	
						Thick	Thin	Deposited Aluminum	
Finish code cl	ass per MIL spec.	F/N/L	W	Α	Z/K	Т		Р	
RoHs Complia	ant	<b>√</b>	No	✓	<b>√</b> (1)	_ (8)		_ (9)	
Galvanic com cadmium	patibility with	Poor	Very good	Good	Good (2)	Poor (3)		Good	
Easy to produ	ce in mass with multi sourcing	✓	✓	✓	✓	No <sup>(4) (10)</sup> No <sup>(4) (10)</sup>		No <sup>(5)</sup>	
Finish accordi	ng to standard	ASTM B733	ASTM B766	Class-2 AMS-A-8625	ASTM B841	No standard (6) No standard proprietary process proprietary process		No standard (6) proprietary process	
Conductivity < 2.5 mΩ		√ <1 mΩ	✓	No	✓	✓ v		✓	
Durability (50	0 mating cycles)	✓	✓	✓	✓	✓ ✓		_ (7)	
Dynamic salt	Dynamic salt spray resistance		1000 hours	500 hours	1000 hours	1000 hours	1000 hours <sup>(8)</sup>	1000 hours <sup>(7)</sup>	
Temperature	according to standard 175°C	<b>√</b>	✓	✓	✓	✓	✓	✓	
rating	200°C	✓	No	No	✓	✓	✓		
Not Reflective	e	No	✓	<b>✓</b>	✓	✓	✓	✓	
Non-Magnetic	С	✓	✓	✓	✓	✓	✓	✓	
Cr6+ < 0.01 (RoHS limit =		✓	No	✓	✓	<b>√</b>	_ (8)	_ (9)	
Easy to check Thickness of	homogeneity / layer	✓	✓	<b>√</b>	✓	No <sup>(10)</sup>	No <sup>(10)</sup>	✓	
Environment friendly		Poor	Poor	<b>✓</b>	Good	Poor (11)	Poor (11)	-	
Human health	n and safety	✓	Poor	<b>✓</b>	✓	Poor (12)	Poor (12)	Poor (13)	
Compatibility with new de-icing fluid (with potassium acetate)		✓	<b>√</b>	<b>✓</b>	<b>√</b> (14)	_ (14)	- <sup>(14)</sup>	_ (14)	

See next page for notes explanation.

### **Backshells & Accessories**

#### Aluminum Backshells & Caps

#### 1 SOURIAU Zinc Nickel (Z/K code) and RoHS

A unique SOURIAU plating process compliant with RoHS regulation for Cadmium and Cr6+ restriction.

### Electrical compatibility of Zinc Nickel (Z/K code) with Cadmium (W code)

Electrical potential of Zinc Nickel and Cadmium are very similar which removes the risk of galvanic corrosion and defects after 500 hours salt spray.

### 3 Electrical compatibility of Nickel PTFE (T code) with cadmium (W code)

PTFE is an inert polymer, therefore the galvanic potential of Nickel + PTFE will be the potential of the Nickel alone. It means that the electrical compatibility is not guaranteed between Nickel PTFE and Cadmium for long salt exposure, which is not the case for Zinc Nickel (electrical potential close to Cadmium).

### 4 Nickel PTFE (T code) production processes complex and expensive

Nickel PTFE requires specially manufactured high tolerance machined parts (special requirement on surface roughness) as the thicker plating is not compatible with standard machined parts.

- These special machined parts lead to a higher cost and quality risk (mixing very similar parts and special care in case of outsourcing).
- Therefore, the high thickness of nickel PTFE means a long deposit time and also a more expensive process.
- The lifetime of the chemical mixture is half than an electrolytic nickel or nickel alloy (Zinc Nickel) mixture.

## Pure Electrodeposited Aluminum (P code) very complex and unique deposition process

Very complex and explosive process which requires a building with special containment facility and not available in standard plating shops. Main limitation are the following:

- Flammable and explosive solvent which requires inert atmosphere.
- · Highly skilled worker (expertise and training)
- Specific care for handling and storage of mixture in a separate building.

#### 6 ASTM standards

These standards are defined to allow a reliable quality level of plating process with multisourcing option. Nickel PTFE (T code) and Pure Electrodeposited Aluminum (P code) are not defined by ASTM industrial standards.

### 7 Cycles of durability, limitation for Pure Electrodeposited Aluminum (P code)

Performance limitation has been raised in 38999 dynamic salt spray by tests against Pure Electrodeposited Aluminum:

- Galling: abrasive wear of Ni-plated EMI band leads to generate conductive particles with a potential risk of short circuiting the contacts.
- Requires use of lubricants limited effectiveness, risk of lower electrical continuity.

### Thin Nickel PTFE (T code) salt spray resistance

Thin Nickel PTFE (T code) could require Cr VI to meet corrosion performance and consequently not comply with ROHS limit.

This is one way to heal pores at defect sites of the primary parts and to decrease the production cost of the thick Nickel PTFE plating (see note 4).

### 9 Pure Electrodeposited Aluminum (P code) and Chromium VI

Chromium VI is required to meet high corrosion performances.

### 10 Thickness control of Nickel PTFE layer (Thin and Thick Layer)

There is no standard in line equipment to control the homogeneity of PTFE concentration within the plating material and the only way to control the PTFE concentration is achieved with complex lab equipment such as Scanning Electron Microscope (PTFE is a non conductive material).

There is consequently a strong limitation for in line process control and ability to outsource. It means that the lack of control associated with the risk of non homogeneity of the PTFE concentration could lead to an uncontrolled dormant failure and a rapid corrosion.

### Environment friendly, limitation for Nickel PTFE (T code)

The average bath lifetime of the chemical nickel PTFE is half that of electroless nickel and 10 times less than nickel alloy (zinc nickel) bath. This leads to a higher waste volume of nickel pollution. Furthermore, the waste toxicity of electroless nickel or nickel alloys is higher than the electrolytic process:



- Cadmium
- Nickel electroless
- Nickel PTFE
- · Electrolytic zinc nickel

In addition, the PTFE material is toxic and indestructible. Some PTFE suppliers might stop their PTFE production after 2013 (ie. Dupont)

### Nickel PTFE (T code) is potentially hazardous to human health

The Nickel PTFE material is recognized as toxic and indestructible. Most of the experts are considering PFOA (used in PTFE) a «likely human carcinogen». This was also proposed by the Environmental Protection Agency (EPA).

### Pure Electrodeposited Aluminum (P code) process is very hazardous to safety

For Pure Electrodeposited Aluminum, production is a very high risk for human safety due to:

- Flammable and explosive solvent which requires inert atmosphere.
- High skilled workers necessary (expertise and training).
- Specific care for handling and storage of mixture in a separate building.
- Pure Electrodeposited Aluminum is considered as a dangerous explosive process for people involved in the plating process.

#### 14 De-icing fluid (contains potassium acetate)

SOURIAU Zinc Nickel is compatible with de-icing fluids containing potassium acetate.

No datas found regarding Nickel PTFE or Pure Electrodeposited Aluminum.

# SOURIAU www.souriau.com

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