 Rondelice	SALES SPECIFICATION SLUGS	Sales specif. No.: R 100 000 0000 10 Issue: 11 Valid since 1. 3. 2017 Responsible person: Godicelj Tomaz Page: 1/6
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1 BASIC PRODUCT DATA

Aluminium slugs are suitable for the manufacture of impact extruded part tubes and aerosol cans and can be used in cosmetic, pharmaceutical, food, ... industry and for other application. We manufacture slugs of various diameters, with holes or without them, different thickness, soft annealing, worked surfaces (sandblasting, vibration), flat or domed.

The properties of material, the production and the supporting processes (purchase, handling with raw materials, traceability and document handling) are in conformity with the pharmaceutical legislation.

2 SUITABLE USAGE NORMS

Purchase specification L526000000000

- EN 458-2; EN 570; EN 573-3; EN 602; EN 14287; EN 10204;
- ISO 6506

3 QUALITY CHARACTERISTICS OF THE PRODUCT

3.1. Chemical composition values:

The chemical composition value is carried out according to the following recipes:

- a) for the quality Al 99,7 acc. to recipe L 526 150 xxxxxx
- b) for the quality Al 99,5 acc. to recipe L 526 162 xxxxxx
- c) for the quality Al 99,3 acc. to recipe L 526 166 xxxxxx
- d) for the quality Al 98,7 acc. to recipe L 526 167 xxxxxx

The values are listed in the following table:

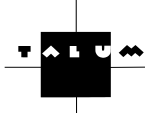
Table 1: The chemical composition value of the slugs according to recipe TALUM and EN 573-3

Elements (%)	150	1070A	162	1050A	166/M3	178/M4	3102	167/M6	3207
Al min	99,7	99,7	99,5	99,5	99,3	99,1	99,1	98,7	98,7
Si	0,05 - 0,09	0,20	0,07 - 0,11	0,25	0,04 - 0,09	0,08-0,15	0,40	0,15 - 0,20	0,30
Fe	0,15 - 0,20	0,25	0,24 - 0,30	0,40	0,17 - 0,24	0,24-0,35	0,70	0,35 - 0,40	0,45
Si : Fe	/	/	1 - (2:3)	/	/	/	/	/	/
Mn	0,02	0,03	0,05	0,05	0,27-0,33	0,35-0,40	0,05-0,40	0,5-0,60	0,4-0,80
Mg	0,01	0,03	0,01	0,05	0,01	0,01	0,05	0,01	0,10
Cu	0,01	0,03	0,01	0,05	0,02	0,02	0,10	0,02	0,30
Ti	0,005-0,03	0,03	0,005-0,03	0,05	0,005-0,03	0,005-0,03	0,10	0,005-0,03	0,05
Zn	0,03	0,07	0,03	0,03	0,03	0,03	0,30	0,03	0,10
Ga	0,02	0,05	0,02	0,05	0,05	0,05	0,05	0,05	0,05
Cd	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001
Individual imp.	0,01	0,03	0,01	0,03	0,02	0,02	0,05	0,05	0,05
Impurities total	0,30	0,30	0,50	0,50	0,70	0,70	remain	0,15	remain

Note 1 – Heavy metals : Cd + Hg + Pb + Cr (VI) < 100 ppm, Cdmax. = 10ppm

Note 2 – In case of alloy 167: target not to exceed Mg 0,002% and Cu 0,005%. It's not obligatory.

The slugs meet requirements acc. to regulations 94/62/EG and 2000/53/EG

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3.2 Mechanical characteristics

Regarding the further punching procedure of the slugs in the manufacturing process. They are supplied in a soft annealing condition.

Table 2: Hardness value after annealing

Chemical composition value	Hardness acc. to Brinell (HB)
EN AW – 1070 A	max. 19
EN AW – 1050 A	max. 20
EN AW – 3102 – M3	max. 23
EN AW – 3102 – M4	max. 26
EN AW – 3207	max. 28

Table 3: Hardness value after surface treatment (according to EN 570)

Chemical composition Value	Hardness acc. to Brinell (HB)
EN AW – 1070 A	max. 21
EN AW – 1050 A	max. 23
EN AW – 3102 – M3	max. 23
EN AW – 3102 – M4	max. 26
EN AW – 3207	max. 28

For hardness definitions ISO 6506 will be used.

The measuring parameters are: - steel - ball diameter 2,5 mm, load 153 N.

3.3 Shapes

We manufacture round slugs, with holes or without, worked on with vibrating or sanding, soft annealing, domed or flat. Every type of the slugs has its own shape's definition.

3.3.1 Designation in orders or offers in accordance with EN 570

- the name of the product (slug);
- the number of the European Standard;
- the slug shapes, e.g. flat, round with or without hole, domed;
- dimensions in millimetres;
- the designation of the aluminium;
- the surface finish.

Standard designation - round slug without a centre hole (figure 1)

Example:

slug EN-number, shape(rd) - round, diameter x thickness, material

slug EN 570 - rd 24,8 x 4,2 - EN AW – 1050 A or

slug EN 570 - rd 24,8 x 4,2 - EN AW – Al 99,5

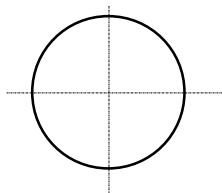
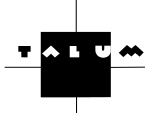


Figure 1

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Standard designation - slug with a centre hole (figure 2)

Example: slug EN - number, round (rd), diameter x thickness x hole diameter (ch), material
slug EN 570 - rd 24,8 x 4,2 x 8 ch - EN AW - 1050 A or
slug EN 570 - rd 24,8 x 4,2 x 8 ch - EN AW – Al 99,5

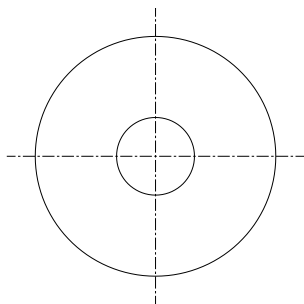


Figure 2

Dimension tolerances

are set up within the below mentioned tolerances (Tables 4 – 7).

Table 4: Tolerance on diameter (D) after punching according to EN 570

Diameter of slugs (mm)	Tolerance (mm)	
from	To	
-	10	± 0,02
10	40	± 0,03
40	60	± 0,04
60	80	± 0,05
80	120	± 0,06
120	150	± 0,08
150	200	± 0,10

Table 5: Thickness tolerance (S) after punching

Thickness of slugs (mm)	Tolerance (mm)	
from	to	
-	2,8	± 0,03
2,8	8,5	± 0,05
8,5	12,0	± 0,07

Table 6: Tolerance on hole diameter of flat slugs according to EN 570 article 5.1.3

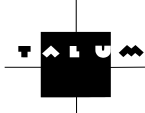
Diameter of hole (mm)	Tolerance (mm)	
From	to	
-	10	± 0,05
10	20	± 0,07
20	-	± 0,10

Table 7: Diameter tolerance (D) slugs after punching for tubes

Diameters of all slugs	Tolerance min	Tolerance max
Outside diameter	- 0,02mm	+ 0,05mm
Hole Diameter	- 0 mm	+ 0,10mm

The tolerances stated in Table 6 apply in case the hole diameter is smaller than 40 % and thickness 2/3 of the hole diameter.

The ordered slugs with hole requiring dimensions out of EN 570, article 5.1.3. are manufactured in tolerances ± 0,1 mm.

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Tolerance of hole eccentricity (e)

The hole eccentricity shall not exceeded 0,15 mm. $e \leq 0,15$ mm (Figure 3)

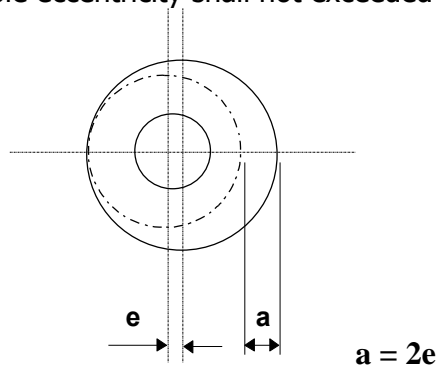
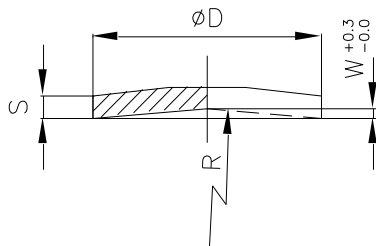


Figure 3

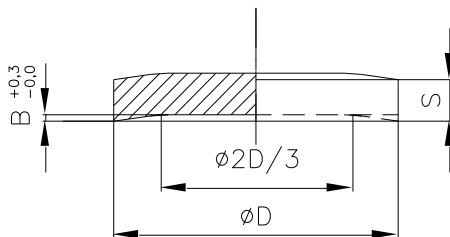
Domed slugs

Slugs are domed according to TALUM's standard or according to buyer's demand.

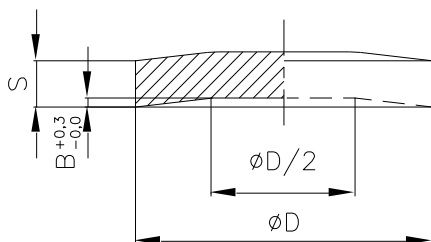
Table 8: Slugs - domed (B) TALUM STANDARD



ϕD (mm)	$W^{+0.3}_{-0.0}$ (mm)
13,3 – 53,3	0,7 – 2,3

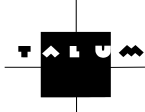


ϕD (mm)	$B^{+0.3}_{-0.0}$ (mm)
34,7 – 73,6	1,0



ϕD (mm)	$B^{+0.3}_{-0.0}$ (mm)
34,7 – 73,6	1,0 – 2,3

Remark: The tolerances of domed slugs are measured in the centre.

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3.4. Surface finish

Local deformations are set according to EN 570, and for slugs amount to 30 g max. increase of dimension at the point of deformation 0,2 mm and for slug mass 30 to 50 g max. increase of dimension 0,4 mm.

After punching:

Slugs are shiny with perfect cut.

After surface treatment :

The surface is evenly roughened and is without light patches or deformed edges.

The surface treatment itself causes an increase from the standard slug dimensions by cca. 0,04 mm.

4. PACKING, MARKING, QUALITY CERTIFICATE

4.1. Packing

Surface finished slugs are filled in cardboard boxes carrying approx. 25 kg, depending on dimensions of the slugs. The cardboards are then placed on standard wooden pallets in 4 rows of 8 boxes. Depending on the quantity ordered min. 1 row and max. 5 rows of 8 boxes may be packed on last pallet. The piled boxes with slugs are covered with PVC foil and wrapped up with shrink foil on the pallet.

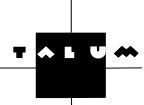
Table 9: packing material used for standard packing of slugs.

Packing material	standard packing
Pallet	1200 x 800 x 134 mm
Cardboard boxes (370 x 280 x 178 mm)	32 pieces per pallet
Pallet height (mm)	≈ 900
Net weight (kg)	≈ 800
Pallet wrapped with shrink foil	yes
Pallet covered with PVC foil	yes

4.2. Marking

The cardboards are marked as stated in the Table 10. The pallet are marked and labelled with data on a front side (shorter side of pallet). All details are stated in the Table 11 :

Table 10: Full cardboard boxes are marked with the following data:	Standard packing	Table 11: The content of the label on the packed pallet	Standard packing
Name of manufacturer	yes	Name of manufacturer	yes
Date of packing	yes	Slugs dimension	yes
Name of buyer	yes	Internal order number Talum	yes
Buyers product number	yes	Batch number	yes
Buyer's order number	yes	Date of packing	yes
Internal order number Talum	yes	Buyer's order number	yes
AI quality (%)	yes	Net weight (kg)	yes
Batch number	yes	AI quality (%)	yes
Slugs dimension	yes	Number of discs (only for discs)	yes
Number of packing line	yes	Pallet number	yes
Net weight (kg)	yes	Buyers product number	yes

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4.3. Quality certificates

The manufacturer guarantees that every shipment is made according to Buyer's demand. Other than the usual transport documents every shipment leaving the factory is accompanied by a quality certificate; "TEST REPORT", which corresponds to EN 10204 – 3.1.B standard.

5. QUALITY CRITERIA

- a) The quality of the slugs is guaranteed in accordance with Quality System ISO 9001.
- b) The control of the manufacturing is based on the control plan .

6. COMPLAINTS

Complaints are reconsidered in order to find solution. In principle complaints should be provided not later than 12 months after delivery.

The buyer is liable to forward the following data to the supplier:

- a) order number
- b) pallet number
- c) type or. slugs dimensions
- d) number of faulty pieces

The complaints are carried out on basis of samples of defected material, delivered by the buyer.

After the complaint is adjusted by the supplier, the complained quantity is subject to an agreement between the supplier and buyer, and can be:

- sending back the material to the supplier and an agreement for a credit note
- sending back the material and supplying new, suitable material
- repaying the damage to the customer which occurred because of proven inferior quality of slugs.

7. MISCELLANEOUS

The quality of the slugs, as set in this specification, is valid for all deliveries unless otherwise stated.

Filled in by customer or supplier

<p>Remarks:</p>	<p>Approved by:</p> <p>Date:</p> <p>Signature:</p> <p style="text-align: center;">The responsible for specification</p>
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