

<b>ELABORATION:</b>	<b>APPROVAL</b>	<b>PME</b>
LUCILENE T. FERRANDI DA SILVA	CAETANO BELGA MARTINEZ	
DATE:	DATE:	

## 1. MATERIAL: BARREL

High strength barrel nut.

## 2. PROPERTIES

### General requirements:

ITEM		L.S.L.	U.S.L.	TEST METHOD	SIGA-QUALITY*
01	Material	Steel Grade 10		ISO 898-2	C
02	Raw Material Chemical composition limit, S element, % weight	-	0.02	-	C
03	Raw Material Chemical composition limit, P element, % weight	-	0.02	-	C
04	Raw Material Chemical composition limit, S+P aggregate, % weight	-	0.03	-	C
05	Mechanical Properties (Proof load and Hardness)	Grade 10		ISO 898-2	C
06	Impact at -40°C (Charpy-V), J	28	-	ISO 148 and ISO 898-1 for machining	C
07	Height of non-decarburized thread zone (E)	Ref. 02	-	ISO 898-1 DIN EN 14399	C
08	Depth of decarburization (G), mm	-	0.015	ISO 898-1 DIN EN 14399	C
09	Thread tolerance prior to coating	6H		ISO 965-2	C
10	Surface carburization	Unacceptable		DIN 50602	C
11	Presence of $\delta$ -ferrite	Unacceptable		DIN 50602	C
12	Cleanliness (K3)	-	20	DIN 50602	C
13	Dimensional, mm	For dimensions and its tolerances, follow specific drawing for each purchase order			C I

14	Coating specification	Ref. 01	Ref. 01	C I
15	Corrosion resistance at Salt Spray (1000 hours)	No red corrosion	ASTM-B117 or ISO 9227	C
16	Finishing	Continuous and smooth surface, free from imperfections (chips, cracks, dimples, de-laminations, fisheye and defects)		CI
17	Magnetic Particle Inspection (100% of the pieces must be inspected)	No defects	ISO 9934	C

**Reference**

\*Legend:

Certificate: C

Data-sheet: D

Inspection: I

Not Applicable: N/A

L.S.L. and U.S.L. identify respectively the lower and upper limits for the property, TEST METHOD is correlated to an international standard or method for the property measurement and SIGA-QUALITY field determines if the requested information must be on the certificate, identified on the container or only on the data-sheet.

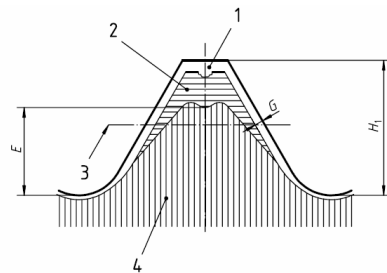
**Ref 1: The part number will be identified in the purchase order**

PART NUMBER	COATING SPECIFICATION	L.S.L.	U.S.L.	METHOD	SIGA-QUALITY*
COATING 12/24	Delta Tone 9000 coating, µm (applied in 2 layers)	4	8	Dörken certified	C
	Delta Seal Silver, µm (applied in 2 layers)	8	16		C
COATING 15/25	Delta Tone 9000 coating, µm (applied in 2 layers)	10	15	Dörken certified	C
	Delta Seal Black GZ, µm (applied in 2 layers)	5	10		C
COATING 12/25	Delta Tone 9000 coating, µm (applied in 2 layers)	12	25	Dörken certified	C

COATING 20/30	Delta Tone 9000 coating, $\mu\text{m}$ (applied in 2 layers)	12	18	Dörken certified	C
	Delta Seal Black GZ, $\mu\text{m}$ (applied in 2 layers)	8	12		
COATING 10/12	Geomet 500 grade B coating, $\mu\text{m}$ (applied in 2 layers)	8	10	Dacral certified	C
	Plus L coating, $\mu\text{m}$ (applied in 2 layers)	2	-		C

**Ref 2: Decarburization zones**

$$E_{\min} = \frac{3}{4} \cdot H_1$$



**Key**

- 1 Completely decarburized
  - 2 Partially decarburized
  - 3 Pitch line
  - 4 Base metal
- $H_1$  is the external thread height in the maximum material condition.

**Packaging requirements:**

The material must be protected against mechanical damage caused during transport and handling, and against insertion of foreign objects and water.

**MATERIAL TECSIS  
SPECIFICATION  
(ETM)**

NUMBER:	REV.
<b>ETM 000-011-001</b>	
PAGE:	
4 of 4	

### 3. REVIEW CONTROL LIST

REVISION	RESPONSIBLE	REVIEW REASON	DATE
000	Diego Silva	First Issue	06/01/10
001	Lucilene T, Ferrandi da Silva	Review for inclusion of coating 12/24	25/04/11