

**REPORT 14/075**

 Date: 08/05/2014  
 Author: Giovanni Borracci

Reason for analysis: PPAP Edison

Requester: GPS1 - Cicirelli Giacomo

 Part Name: IS2  
 P/N: 250.6.5176.35  
 State of parts: Finished

 Material: GCG\_805000\_Part 2  
 Customer:

Result: OK

Distribution List: GPS1 - G. Cicirelli

Notes:

**Surface Hardness Verification**

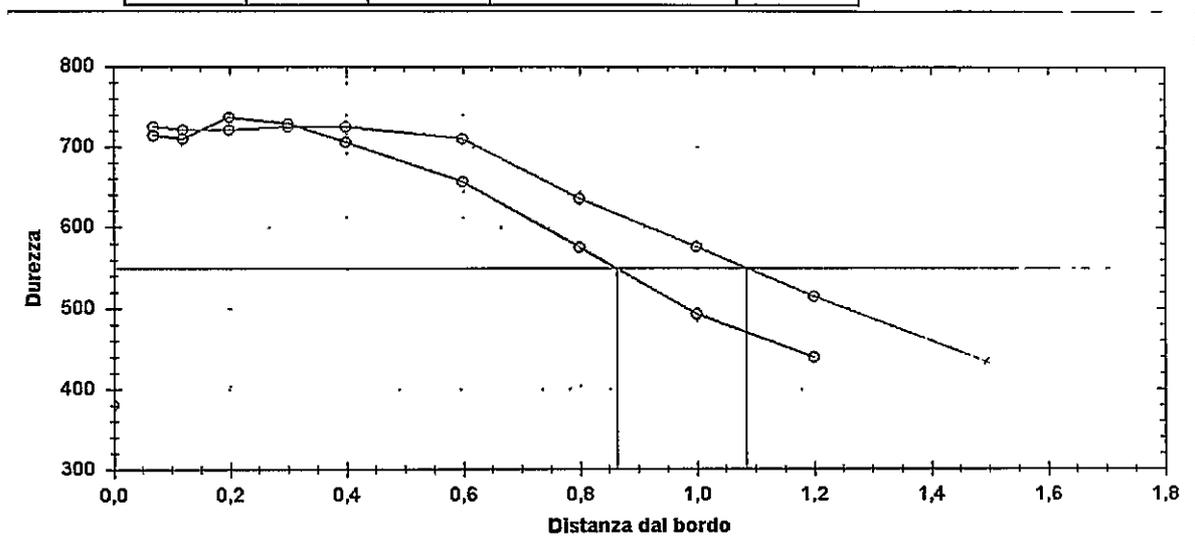
Scale	Position	Values [mm]	Range
HRA	M1	81,0	80.5 + 2.5
HRC	M1	60,8	60 + 3

**Core Hardness Verification**

Sample	Scale	Position	Values [HV10]	Range
1439/14	HV10	M6	381	≥ 300

**CHD Verification**

Sample	Scale	Position	Values [mm]	Range
1439/14	CHD 550 HV1	M2	1,08	0.7 + 0.5 mm
1439/14	CHD 550 HV1	M3b	0,86	min 0.2 mm



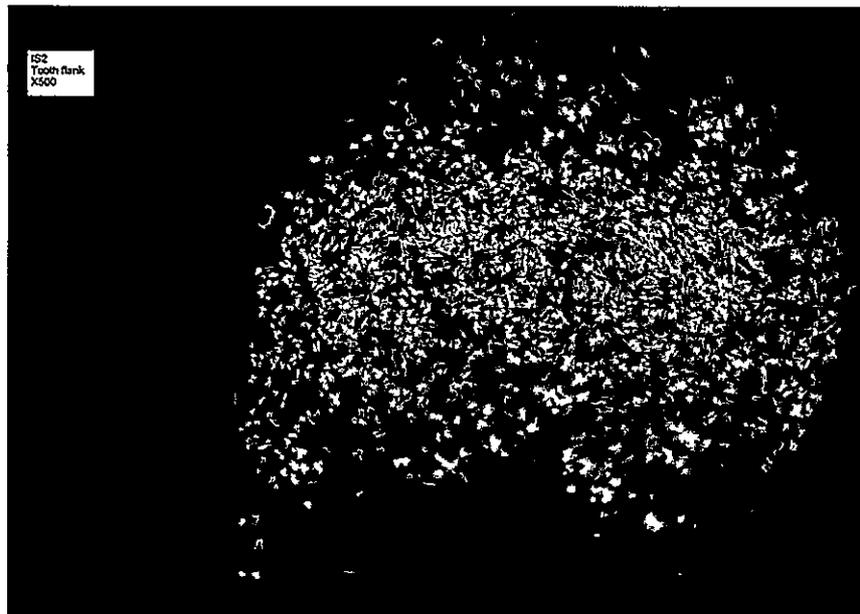
Picture 1: Hardness profiles

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*Metallographic Analysis*

Sample # 1439/14	IS2
Tooth flank surface structure:	Martensite + 10% retained austenite (OK)
Tooth base core structure:	Martensite + bainite (OK)



Picture 2: Surface microstructure at tooth flank (X500)



Picture 3: Core microstructure at tooth base (X500)

# Process Capability Study Plan

DCT Shafts

Side 1

Part -Nr.: 250.6.5176.35

Supplier: ■■■ GETRAG

Creation Date: 27.05.2014

Part Name: Input Shaft outer

Supplier Plant Name: BARI

Revision Date: 30.05.2014

SCIF #	Identification of Characteristics	Specified Tolerance	$C_m/C_{mk} \geq 1,67$	Study #	Scheduled date	$P_{pk} \geq 1,67$	Study #	Scheduled date	Measurement equipment	Results / Comments
1	Measurement over Balls Profil I	Min. 97,248 Max. 97,331	2.26			2.10			TEST BENCH	
2	Measurement over Balls Profil III	Min. 38,382 Max. 38,441	3.13			2.21			TEST BENCH	
3	Length	+0,025 -0,025	2.73			1.67			ZEISS	
4	Diameter	G6	1.39			1.01			EXAMECA	POST PROCESS 100% CHECK
5	Diameter	G7	1.20			1.17			EXAMECA	POST PROCESS 100% CHECK
6	Diameter	G7	1.48			1.06			EXAMECA	POST PROCESS 100% CHECK
7	Diameter	k6	2.16			1.67			EXAMECA	
8	Diameter	k6	1.78			1.68			EXAMECA	
9	Diameter	+0.05	4.50			2.12			EXAMECA	
10	Diameter	+0,022 +0,011	1.70			1.67			EXAMECA	
11										
12										
13										