TSITOURAS FOUNDRY GROUP
METALLURGICAL OPERATIONS
Perama – Mandra, Attiki, Greece · ISO 9001 (Bureau Veritas)

EN 10204:2004
TYPE 3.1
INSPECTION CERTIFICATE

INSPECTION CERTIFICATE

No. TFG-CERT-2026-0111 · Heat M102 · F3-2026-0011 · 10-08-2026

CUSTOMER	**Customer data removed**	ORDER NO	**[removed]**
PART	**Bearing bracket**	DRAWING	**Customer drawing [removed]**
MATERIAL	**GS_20Mn5 - EN 1.6220**	QUANTITY	**2 pcs × 55 kg**
HEAT / TRACE	**M102 · F3-2026-0011**	DATE ISSUED	**10-08-2026**
PROJECT	**[removed]**		

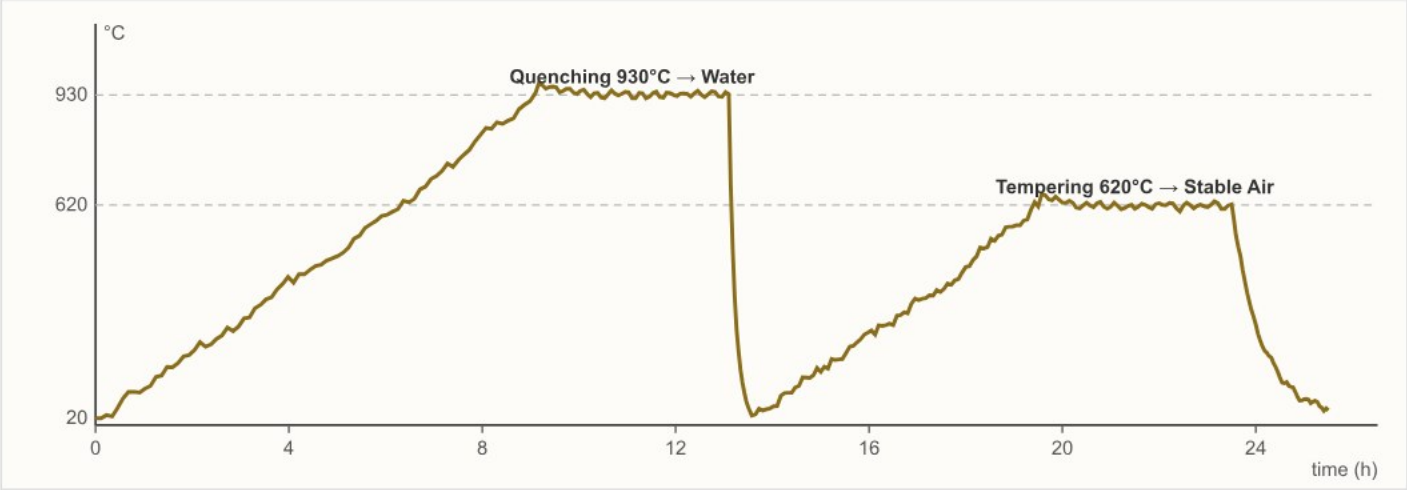
1 CHEMICAL COMPOSITION — heat analysis, % by mass

	C	Si	Mn	P	S	Cr	Ni	Mo	Cu
Spec – GS 20Mn5 + QT EN : 1.6220 (%)	0,17-0,23	≤0,6	1-1,6	≤0,02	≤0,02	-	≤0,8	-	–
Measured	0.218	0.418	1.21	0.0165	0.0116	0.158	0.0598	0.0061	0.0165

Equipment: M1000-26 12973 - Instrument : Hitachi Foundry Master Smart S/N: 71Y0358 **Standard:** GS 20Mn5 + QT EN : 1.6220 **Operator:** QC laboratory **Test date:** 30-06-2026
Comments: [removed]

2 HEAT TREATMENT

Step	Process	Temp (°C)	Ramp (°C/h)	Soaking (h)	Cooling	Date
Furnace: HT1 · 07-07-2026						
1	Quenching	930	100	4	Water	06-07-2026
2	Tempering	620	100	4	Stable Air	07-07-2026



Comments: [removed]

SAMPLE

3 MECHANICAL PROPERTIES

Hardness (HB)	No 1	No 2	No 3	No 4	No 5	Average	Limits	Result
Measured	158	155	160	162	161	**159.2**	149–193	**PASS**

Standard: STANDARD: EN ISO 16859 / ISO 18265 **Operator:** QC laboratory **Test date:** 30-07-2026

Tensile test	No 1	No 2	Average	Limits	Result
Tensile strength Rm (N/mm²)	547.9	547.2	**547.5**	500-650	**PASS**
Yield point Rp0.2 (N/mm²)	368.2	367.8	**368**	≥360	**PASS**
Elongation A (%)	27.5	29	**28.3**	≥24	**PASS**

Standard: TENSILE TEST (EN ISO 6892-1:2019) - Acceptance criteria per order **Operator:** QC laboratory **Test date:** 11-08-2026

Charpy V-notch @ 22°C	No 1	No 2	No 3	No 4	No 5	No 6	Average	Limits	Result
Impact energy KV (J)	146.3	150	147	137	141	135	**142.7**	≥75	**PASS**

Standard: IMPACT TEST (EN ISO 148-1:2016) Acceptance criteria per order **Operator:** QC laboratory **Test date:** 30-07-2026

We hereby certify that the material described above has been manufactured, tested and inspected in accordance with the order requirements and is in compliance with EN 10204:2004 – Type 3.1. Results relate only to the items identified by the stated heat and trace marks.

company stamp

Quality Manager

Date
10-08-2026

SAMPLE