Inspection Certificate

SUBJECT: **Zyglo ZL-27A Fluorescent Penetrant**

BATCH No: **200508**

MANUFACTURE DATE:14/05/2020

B.B.E.: **MAY 2023**

Abnahmeprufzeugnis DIN EN 10204 3.1
Certificat De reception
Certificado di collaudo
Keuringsrapport

We hereby certify that when tested at the time of manufacture, the above material:

1. Meets the requirements of and has been tested for sulfur and halogens according to:
   a) ASME Boiler and Pressure Vessel Code, 2019 Edition, Section V, Non-destructive Examination.

   b) Anion analysis by ASTM D129 decomposition followed by Ion Chromatography method Annex A4.

   c) ASTM E-165/E-165M-18, Paragraph 7.1.

   d) MIL-STD-2132D, 11 February 2003, Paragraph 7.1, 7.1.2, 7.1.3 and Appendix C, Paragraph 40.

   e) EN ISO 3452-2

   Test results obtained were as follows:

Sulfur:0.0002 wt % of residue. **Chlorine + Fluorine:0.0044** wt % of residue.

Cleaner residue (See note 3)	g/100g	g/100ml

2. Meets the requirements of Rolls Royce RRP 58003 (CSS 232), SAFRAN Pr 5000 / In 5000, AMS 2644G and ASTM E 1417/E 1417M-16 Paragraph 5.1& 6.5.1. Penetrant brightness tested according to ASTM E 1135.
   When tested according to paragraph 4.3.2 of AMS 2644G the following results were obtained:

4.2.2.1	**Penetrant Tests**		
	Flashpoint (PMCC) (3.3.3)	:	109.0 °C
	Viscosity (3.3.4)	:	8.60 mm^2/s (cSt) @ 38°C
	Fluorescent Brightness (3.3.8.3.2)	:	105.3 % of Standard (AMS 2644 FP-4PE)
	Water tolerance Method A, B, C & D (3.3.8.5)	:	Not water soluble
	Penetrant Removability (3.3.8.6)	:	Conforms
	Water Content (3.3.8.7)	:	0.06 %
4.2.2.2	**Emulsifier Tests**		
	Flashpoint (PMCC) (3.3.3)	:	N/A
	Viscosity (3.3.4)	:	N/A
	Water Content Method D only (3.3.9.6)	:	N/A
4.2.2.3	**Developer Tests**		
	Developer Fluorescence (3.3.10.2)	:	N/A
	Developer Removability (3.3.10.4)	:	N/A
	Redispersibility (3.3.10.5)	:	N/A
3.3.11.4	**Solvent Remover Tests**		
	Penetrant Removal (4.4.11.2)	:	N/A

3. We further certify that the material does not contain mercury as a basic element and no mercury bearing equipment was used in its manufacture.
   Certification is issued under the auspices of the Quality Assurance Manager.

(Authorised Employee)

For and on behalf of MAGNAFLUX (A DIVISION OF ITW LTD

Notes:

1. Our batch number appears on the label of bulk containers. Aerosols have batch numbers printed on bottom of the container. Bulk materials have a minimum shelf life of 5 years from date of manufacture. Aerosols have a minimum shelf life of 3 years from date of manufacture.
2. Most specifications require test results stated in percent, but some require parts per million (ppm). To convert "percent" figures to "parts per million" move the decimal four places to the right.
3. MIL-STD-271, MIL-STD-2132 and ASME Sec V, all require that materials be subject to a procedure to evaporate off volatile solvents before analysis for Sulfur and Halogens. According to these specifications, only those residues higher than 0.005 g/100ml shall be analysed for Sulfur and Halogens. Lower residues shall be reported.
4. The above certification gives the results obtained at the time of manufacture. Age and use may alter the properties of any material.

FORMAT: MC-17 Version 17

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SPECIFICATION: **EN ISO 3452-2.**

When tested at the time of manufacture the following results were obtained.

Einzeleigenschaft / *Characteristic*	Ermittlungen nach EN ISO 3452-2 Abschnitt	**Anforderungen / *Quality requirement***	**Ergebnis / *Batch testing***
Appearance	6.1	Equal to Std	Pass
Sensitivity	6.2	Equal to Level 3 reference system	Pass
Density	6.3	Nominal 0.931 g/cm^3@ 20°C (Limits 0.884 – 0.978)	0.936 g/cm^3
Viscosity	6.4	Nominal 8.31 mm^2/s @ 38°C (Limits 7.48 – 9.14)	8.60 mm^2/s
Flashpoint	6.5	Nominal 103°C (Limits 98°C Minimum)	109.0 °C
Washability	6.6	(Water Washable Penetrants Only)	N/A
Fluorescent Brightness	6.7	100 % ± 10 % of Type Test Sample	105.3 %
Corrosive Properties	6.11	No Corrosion on Magnesium Alloy	Pass
Sulphur Content	6.12	< 200 ppm	2 ppm
Halogen Content	6.12	< 200 ppm	44 ppm
Water Content	6.20	(Water Washable Penetrants Only)	%

Vorstehende Angaben sind die Ergebnisse unserer Qualitätsprüfung. Sie entbinden den Käufer nicht von einer Eingangsprüfung und haben nicht die Bedeutung, die Eignung des Produktes für einen konkreten Einsatzzweck zuzusichern.

The above information is derived from our quality checks. It does not relieve the purchaser from examining the product upon delivery and gives no assurance of the product for any particular purpose.

Certification is issued under the auspices of the Quality Assurance Manager.

(Authorised Employee)

For and on behalf of MAGNAFLUX DIV OF ITW LTD

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MAGNAFLUX

Inspection Certificate

VENDOR'S REPORT - TEST RESULTS

REPORTS, MATERIALS CONTROL LABORATORY
PRATT & WHITNEY AIRCRAFT
(Plant to which material is shipped)

This is to certify that paragraph number 1 + 5 apply to the shipment described below (Insert at least one of the first 4, plus 5 if applicable)

1. (Applicable to all raw material, to parts made from raw material furnished or purchased by vendor, or to assemblies of which some or all components are made from raw materials furnished or purchased by vendor) Material, parts, or components of assemblies have been inspected & accepted to the specifications involved, & results of tests required by PWA are as shown herein.

2. (Applicable to parts or assembly components made from raw material furnished by PWA and not chemically or metallurgically treated by vendor so as to change surface or internal condition significantly) Parts or assemblies have been machined or formed from material furnished by PWA to make these parts or components of assemblies.

3. (Applicable to parts or assembly components made from raw material furnished by PWA and chemically or metallurgically treated by vendor so as to change surface or internal condition significantly) Parts or components of assemblies have been made from raw material furnished by PWA to make these parts or components of assemblies. Parts, components of assemblies, or assemblies have been inspected and accepted to the specifications involved, and results of tests required by PWA are as shown herein.

4. (Applicable to repaired or reworked raw material, parts or assemblies) The raw material, parts or assemblies have been reworked or repaired in accordance with PWA instructions, and are the same material, parts or assemblies returned for such reworking or repair, except for replacement of assembly components, in which case paragraphs 1 & 5 are also applicable.

5. (Applicable to all assemblies, and to parts when specifically authorised by purchaser) Results of all chemical and physical tests not shown below as well asall other evidence which shows acceptability of raw materials & assembly components, are on file and available for inspection at any reasonable time.

PART OR ASS'y NO (Size if no part no)	CHG.LTR	SUF.NO	SPECIFICATION AS ORDERED *		
PMC 4353-2			PWA 300 Rev.		
QUANTITY	DATE SHIPPED	LOCATION OF PWA PLANT SHIPPED TO		PACK SUB NO	PO NO
HEAT, LOT, CODE or BATCH NO	RAW MATERIAL VENDOR	TYPE COMPOUND or CASTING		PWA HEAT CODES	
200508		**ZL-27A Penetrant**			

** If material, parts or assemblies do not entirely conform to specification requirements, the deviation and authority for furnishing such material are indicated below:*

Results of TESTS

PHYSICAL PROPERTIES	TEST RESULTS	PMC LIMITS (MINIMUM)	PMC LIMITS (MAXIMUM)
Flashpoint	109.0 °C	93°C	-
Kinematic Viscosity @ 38°C	8.60 mm^2/s (cSt)	8.10	10.95
Water Content	N/A	-	-
Fluorescent Brightness	105.3%	90 %	-
Separation of Constituents - Homogenous	Pass	None	None

CHEMICAL PROPERTIES	TEST RESULTS	PMC LIMITS (MINIMUM)	PMC LIMITS (MAXIMUM)
Fluoride Content	1 ppm	-	≤ 50 ppm
Chloride Content	43 ppm	-	≤ 400 ppm
Sulfur Content	0.0002 %	-	≤ 0.100 %
Sodium Content	0.0014 %	-	≤ 0.010 %

Date of Manufacture: 14/05/2020 Magnaflux certifies that **ZL-27A** meets the requirements of **PMC 4353-2**.

Vendor Name	By (Authorised Agent)
MAGNAFLUX (A DIVISION OF ITW LTD)	
Vendor Address FARADAY ROAD, SOUTH DORCAN INDUSTRIAL ESTATE, SWINDON, WILTSHIRE, SN3 5HE, UK	Mariann Rahman Quality Manager