Ecol Sp. z o.o.
Laboratorium
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LAB REPORT

H111113DEMO

Ecol internal number 230494

PCA Polskie Centrum Akredytacji BADANIA AB 1564

Unit ID: * **Wtryskarka / Injection Moulding Machine**

Date: 07.10.2024

Ecol Analizy Olejowe DEMO
ul. Raport przykładowy .
Example report .

Department / location: *: Przemysł Tworzyw Sztucznych / Plastics Industry

sample rating

NORMAL
- parameters in normal range
- the oil is fit for further use

Purpose of analysis: *	Routine control
Sample taken by:	klient
Sampling method/point: *	Vacuum pump,oil tank
Sample reception date:	23.04.2024
Delivered by:	klient
Sample condition:	clear; PTE 200ml
Subject of anaysis:	**Industrial lubricating oils**

Component: *	Hydraulic
Type: *	CX 65 - 180
Manufacturer: *	Krauss Maffei
Serial no.: *	-
Year of manu.: *	-
Application:*	-
System capacity [l]: *	-
Name: *	**Shell Tellus S2 MX 46**

Opinion and interpretation

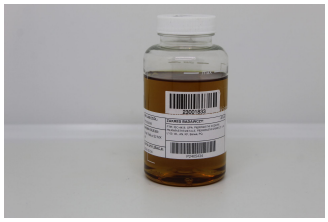
The sample is clear and homogeneous. Viscosity within the range typical for ISO VG 68 class. Viscosity index within the range expected for mineral oil. The marked additive package is typical for HM/HLP class oil. The infrared spectrum correlates well with our reference of fresh Shell Tellus S2 MX 68 oil. Cleanliness class at a very good level. Water content at a good, low level. No alarmingly increased content of metallic particles was found, indicating intensive corrosion or wear processes in the oil system. Acid number in normal range, does not indicate advanced ageing degradation of the oil.

Recommendations and conclusions:

The marked parameters are within the permissible ranges. The oil is qualified for further use without taking corrective actions. It is recommended to observe changes in the next test in accordance with the adopted diagnostic schedule.

The presented opinion / interpretation was developed based on the results of non-accredited and accredited analysis.

ANALYSIS RESULTS		*Current sample*				*reference sample*
Sample number:		*H111113DEMO*	*H111112DEMO*	*H111111DEMO*	*H66521DEMO*	*P2414684*
SAMPLE RATING						
Analysis completed date		***26.04.2024***	*17.04.2024*	*09.01.2024*	*12.08.2021*	*30.08.2024*
*Date of sampling**		***22.04.2024***	*10.04.2024*	*03.01.2024*	*10.08.2021*	*14.08.2024*
*Date of last oil change**						
Top-up since change [l]*	*[l]*					
Operating time since change [h]*	*[h]*					
Total operating time [h]*	*[h]*					



Sample view

	Unit		U					Standard	S.m.
Appearance		**clear**		solid contamination; cloudy	clear	clear	clear		
WEAR									
Iron	ppm	**2,1**	±0.5	3,0	<1,0	2,0	<1,0	ASTM D5185-18	A
Chrome	ppm	**<1,0**		<1,0	<1,0	1,0	<1,0	ASTM D5185-18	
Tin	ppm	**<1,0**		<1,0	<1,0	<1,0	<1,0	ASTM D5185-18	
Aluminium	ppm	**<1,0**		<1,0	<1,0	<1,0	<1,0	ASTM D5185-18	
Nickel	ppm	**<1,0**		<1,0	<1,0	<1,0	<1,0	ASTM D5185-18	
Copper	ppm	**3,5**	±0.5	3,9	3,1	9,0	<1,0	ASTM D5185-18	A
Lead	ppm	**<1,0**		<1,0	<1,0	<1,0	<1,0	ASTM D5185-18	
Antimony	ppm	**<1,0**		<1,0	<1,0	<1,0	<1,0	ASTM D5185-18	
Manganese	ppm	**<2,0**		<2,0	<2,0	<2,0	<2,0	ASTM D5185-18	
Vanadium	ppm	**<1,0**		<1,0	<1,0	<1,0	<1,0	ASTM D5185-18	
Silver	ppm	**<1,0**		<1,0	<1,0	<1,0	<1,0	ASTM D5185-18	

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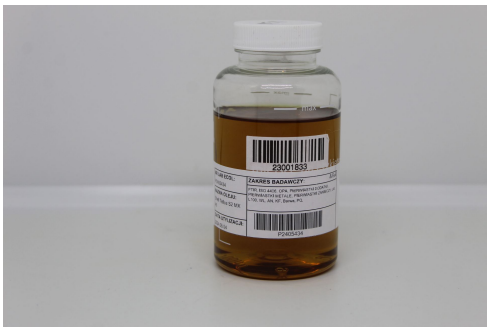
ADDITIVES									
Calcium	ppm	**17,7**	±2.1	20,1	18,4	22,0	12,0	ASTM D5185-18	
Magnesium	ppm	**6,22**	±1.11	7,11	6,64	<5,00	64,2	ASTM D5185-18	A
Boron	ppm	**<1,0**		<1,0	<1,0	<1,0	<1,0	ASTM D5185-18	
Zinc	ppm	**250**	±23	266	273	364	357	ASTM D5185-18	A
Phosphorus	ppm	**255**	±68	291	288	325	315	ASTM D5185-18	A
Barium	ppm	**<1,00**		<1,00	<1,00	<1,00	<1,00	ASTM D5185-18	
Molybdenum	ppm	**<1,0**		<1,0	<1,0	<1,0	<1,0	ASTM D5185-18	
Sulphur	ppm	**688**	±123	701	645	5895	627	ASTM D5185-18	
CONTAMINATION									
Silicon	ppm	**<3,0**		3,0	<3,0	<3,0	<3,0	ASTM D5185-18	
Potassium	ppm	**<1,0**		<1,0	<1,0	<1,0	<1,0	ASTM D5185-18	
Sodium	ppm	**<4,0**		<4,0	<4,0	<4,0	<4,0	ASTM D5185-18	
Lithium	ppm	**<1,0**		<1,0	<1,0	<1,0	<1,0	ASTM D5185-18	
Titanium	ppm	**<5,0**		<5,0	<5,0	<5,0	<5,0	ASTM D5185-18	
Water K. F.	mg/kg	**45**	±24	1522	27	190	-	PB 07.31.00/01	A
PHYSICOCHEMICAL PROPERTIES									
Viscosity at 40°C	cSt	**46,55**	±0.23	46,30	46,10	46,09	46,21	PN-EN ISO 3104:2021-03 (**)	A
Viscosity at 100°C	cSt	**7,127**	±0.035	7,085	7,091	7,550	7,128	PN-EN ISO 3104:2021-03 (**)	A
Viscosity index	-	**112**	±2	111	111	130	113	PN-ISO 2909:2009+ Ap1:2010	A
ASTM Colour	kod ASTM	**2,5**	±0.5	>8	2,3	4,4	-	PB 07.34.00/01	A
Cleanliness	kod ISO	**16/13/11**		19/17/12	15/13/9	14/13/10	-	ISO 4406:2021	A
Amount of particles >4µm	/100 ml	**60880**	±32875	293489	21820	14264	-	ASTM D7647-10(2018) (**)	A
Amount of particles >6µm	/100 ml	**5480**	±3068	69982	5300	6438	-	ASTM D7647-10(2018) (**)	A
Amount of particles >14µm	/100 ml	**1150**	±724	3196	373	767	-	ASTM D7647-10(2018) (**)	A
Amount of particles >21µm	/100 ml	**424**	±267	760	116	209	-	ASTM D7647-10(2018) (**)	A
Amount of particles >38µm	/100 ml	**121**	±76	38	0	13	-	ASTM D7647-10(2018) (**)	A
Amount of particles >70µm	/100 ml	**0**		0	0	13	-	ASTM D7647-10(2018) (**)	A
Acid number	mgKOH/g	**0,47**	±0.16	0,45	0,42	0,74	0,40	ASTM D664-18e2 (**)	A
Spectrum FTIR	-	**Diagram_FTIR**		Diagram_FTIR	Diagram_FTIR	Diagram_FTIR	Diagram_FTIR	ASTM E2412-23a	
Oxidation	A/cm	**<1,0**		<1,0	<1,0	-	-	ASTM E2412-23a	

(**) Standard ASTM D664-18e2 has been withdrawn and replaced by ASTM D664-24
(**) Standard ASTM D7647-10(2018) has been withdrawn and replaced by ASTM D7647-24
(**) Standard PN-EN ISO 3104:2021-03 has been withdrawn and replaced by PN-EN ISO 3104:2024-01



Sample view

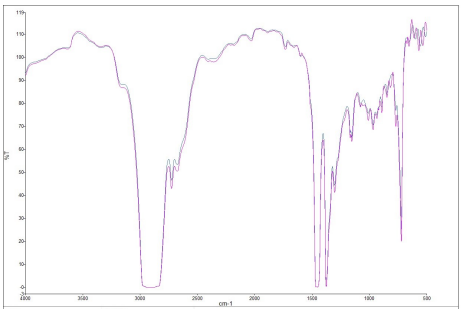


Diagram FTIR

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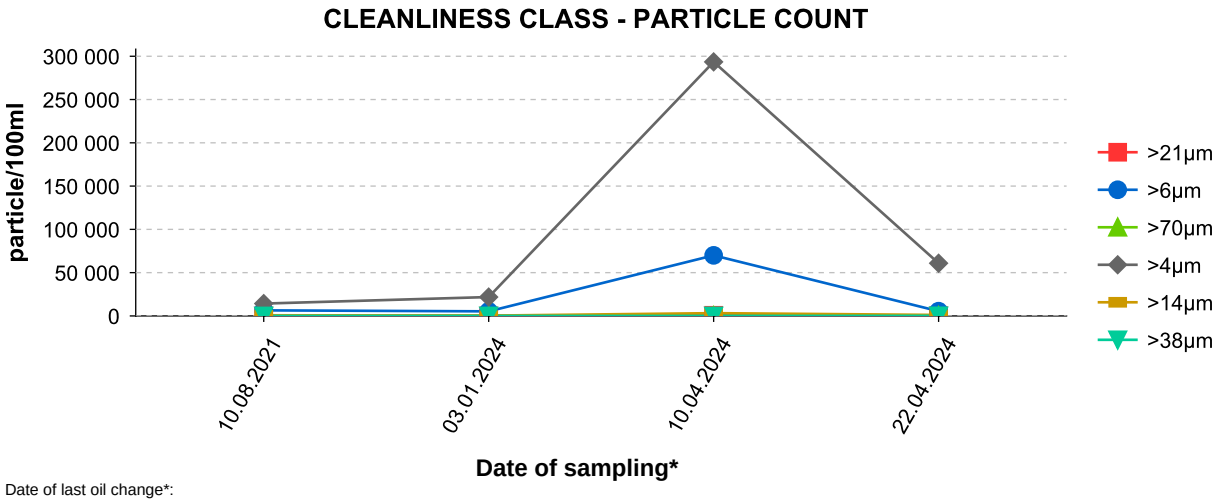
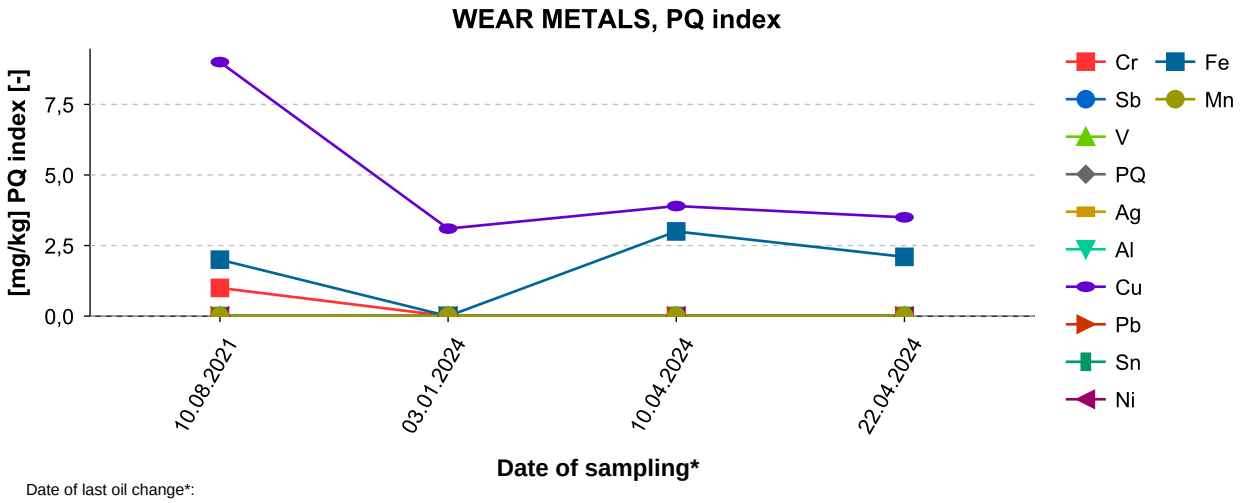
Graphic trends presentation



Date of last oil change*:
Operating time since change* [h]: b.d.
Total operating time* [h]: b.d.



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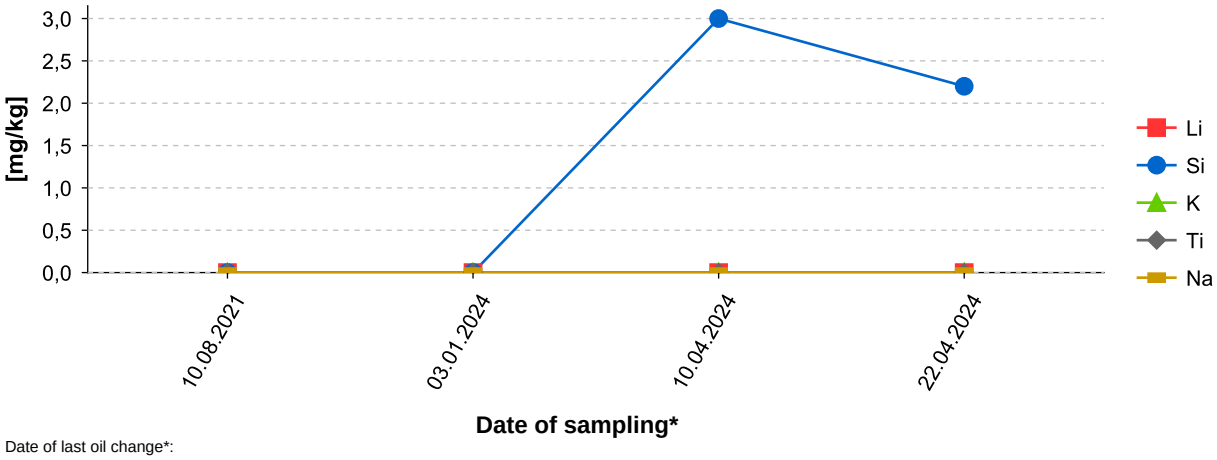
CONTAMINATIONS



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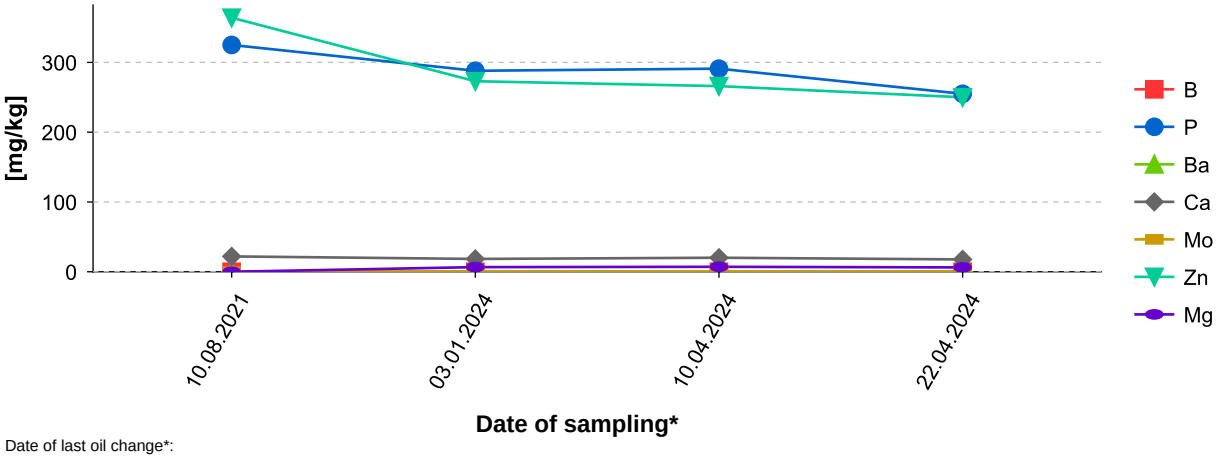
ADDITIVES



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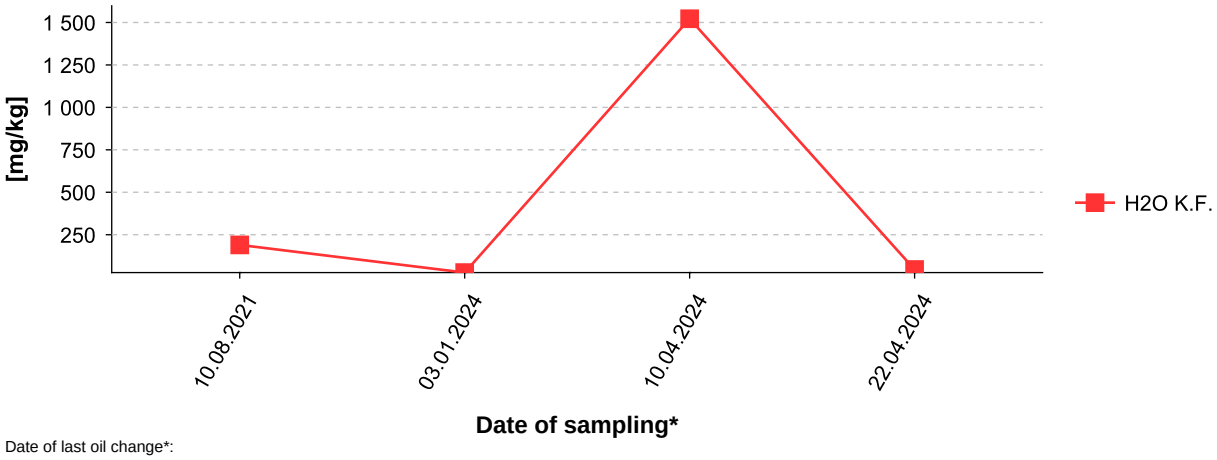
WATER CONTENT



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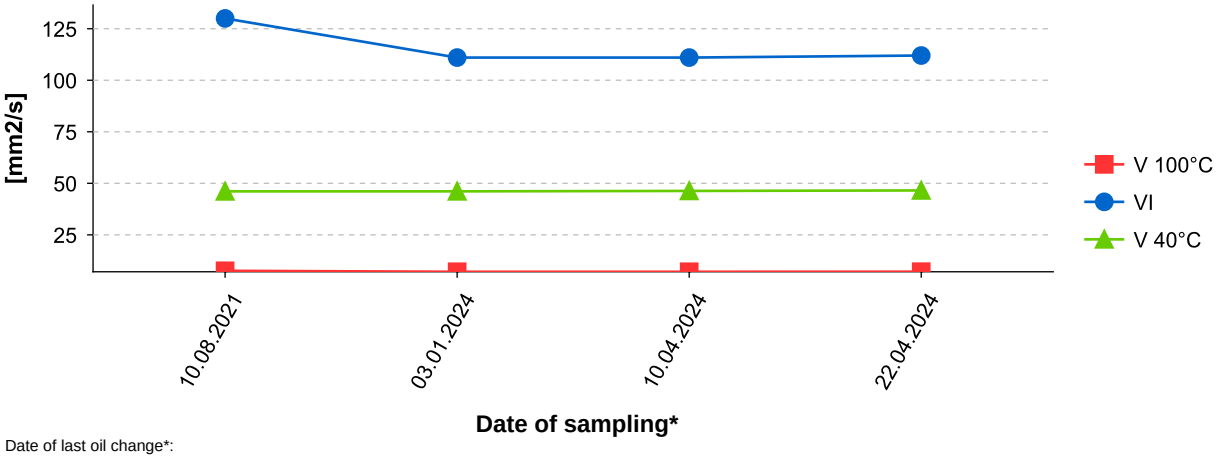
RHEOLOGICAL PROPERTIES



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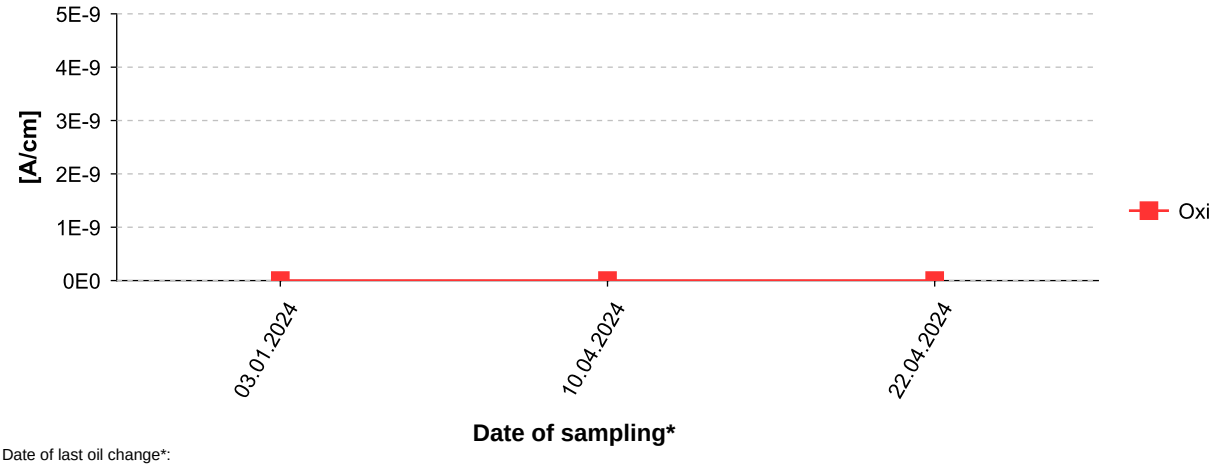
FTIR - OXIDATION, NITRATION, SULFATION



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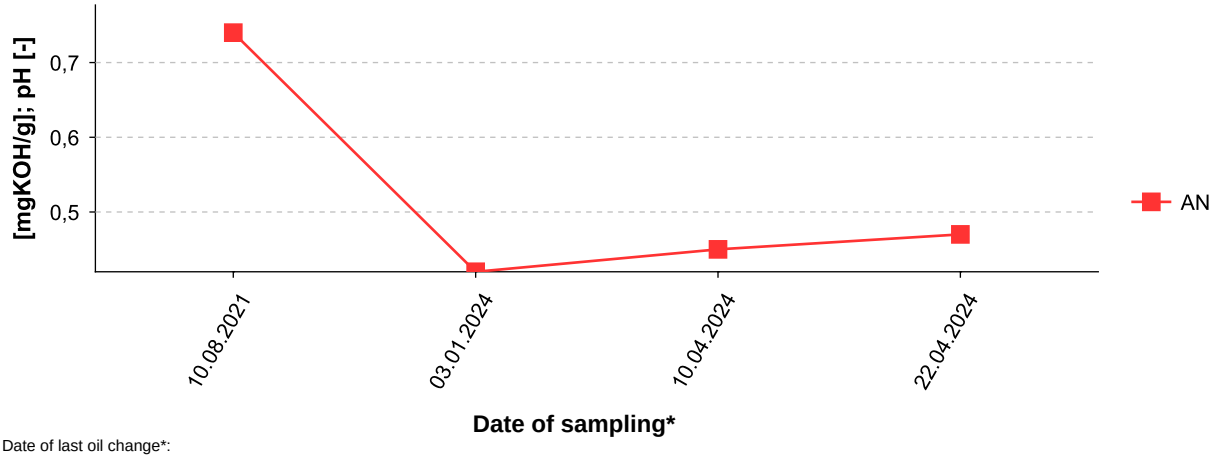
ACIDITY / PH / ALKALINE RESERVE



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Interpreted by
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