

Test Report

Product description

Product name:	Neways Roil Platinum Engine Flush, # 5376
Producer:	CTP GmbH/PRO-TEC Deutschland
Product properties:	Neways Roil Platinum Engine Flush removes operationally caused contamination and resin residues in the complete oil and lubrication circulations, removes residues and blockings in the piston ring and upper cylinder area and neutralizes harmful engine acids.
Product character:	EC – Safety Data Sheet
Application area:	Car and truck applications - Otto engine / diesel engine / high-performance engine - Manual and/or differential gear
Application:	Before the oil change some Neways Roil Platinum Engine Flush (see dosing instructions) is added into the oil circulation (according to the motor type). The engine is operated 15 min idle, afterwards a correct oil change is done. Keep the right dosage for permanent application in truck engines.
Dosing:	200 ml for bikes 375 ml for cars 75 ml oil for permanent cleaning in trucks

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Inspection

Product properties mentioned here below have to be checked within this test report. Corresponding test standards are used as control basis.

Test	Control basis
Dirt dilution	Determination of particle size
Wear protection	Friction test
Emission reduction	Exhaust gas test
Compression test	Compression test

Test execution

Dirt dilution	
Objective:	Size measurement of soot particles in used oil with or without adding Neways Roil Platinum Engine Flush
<p>The dirt sticking on the engine walls is only partially removed during the normal oil change. It is assumed that when the vehicle engine is in idle operation the dirt particles are homogenously distributed in oil. With this investigation the particle size in the oil can be determined. Using Neways Roil Platinum Engine Flush it is possible to determine the particle change by technical measurement. In order make the comparison with Neways Roil Platinum Engine Flush the waste oil was mixed also with new oil.</p>	
Incubation	For the oil samples, the <u>incubation</u> took place in temperature-controlled paddle mixer of company Erweka.
Particle size measurement	<u>Dynamic light dispersion measurement</u> Equipment: ZetaPlus, Brookhaven Instruments Corp. Software: Particle Sizing Software Ver. 2.18

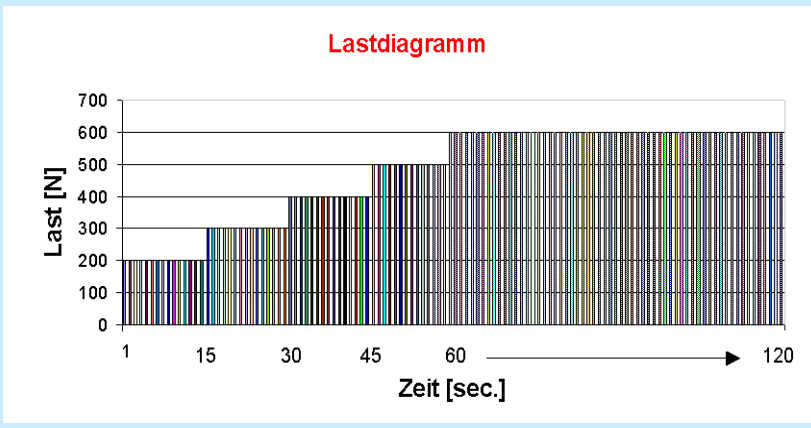
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Dirt dilution	
Procedure	Analysis of the starting substance
	Material: Waste oil type 10W40 15.000 kilometer reading no additive used
	Application: 322,5 ml waste oil (equivalent 3 x 107,5 ml)
	Temperature: 40°C
	Stir: 220 U/min
	Time: 15 min
	Determination of particle size
Procedure	Analysis of the comparison sample
	Material 1: Waste oil type 10W40 15.000 km kilometer reading no additive used
	Material 2: New oil type 10W40
	Application: 300 ml waste oil + 22,5 ml new oil Relation: 100 ml waste oil / 7.5 ml new oil
	Temperature: 40°C
	Stir: 220 U/min
	Time: 15 min
Determination of particle size	
Procedure	Analysis of the application sample
	Material 1: Waste oil type 10W40 15.000 kilometer reading no additive used
	Material 2: Neways Roil Platinum Engine Flush
	Application: 300 ml waste oil + 22,5 ml Engine Flush Relation: 100 ml waste oil / 7.5 ml Engine Flush
	Temperature: 40°C
	Stir: 220 U/min
	Time: 15 min
Determination of particle size	
Remarks	
Three parallel investigations were carried out. The determination of the particle size is done without delay immediately after finishing the incubation phase.	

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Friction test		
Objective	Friction test on a standard body with and without using Neways Roil Platinum Engine Flush	
<p>The wear protection test is carried out according to DIN 51 350 and DIN 68 861. The selected load task in a time interval of max. 120 seconds is not identical with the conditions under normal vehicle operation. The objective of this test is it to prove the effect of the wear protection component in the product.</p>		
Procedure	Equipment:	Timken machine
	Test body:	Steel h= 10 mm , d = 6 mm
	Temperature:	23°C
	Material:	Engine Flush New oil 0 W 40 New oil 10 W 40 New oil 15 W 40 Waste oil* Waste oil* with Engine Flush
Force (N)	Time (s)	
200	0 – 15	
300	15 – 30	
400	30 – 45	
500	45 – 60	
600	60 – 120	
		<p>* Lastdiagramm = Load diagramm Last = Load Zeit= Time</p>
Remarks		
* The used waste oil is identical with the waste oil used for the investigation of the dirt dilution behaviour.		

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Emission reduction	Compression test
Procedure	<p>Before the oil change:</p> <ul style="list-style-type: none">➤ a conforming exhaust gas test was carried out➤ the compression of the single cylinders was determined. <p>Subsequently, 375 ml Neways Roil Platinum Engine Flush were added to the oil lubrication circulation (dosing for cars). The vehicle operates 15 min idle. Afterwards the oil and the oil filter were changed.</p> <p>After the oil change:</p> <ul style="list-style-type: none">➤ a conforming exhaust gas test was carried out➤ the compression of the single cylinders was determined.
Remark	
<p>Both inspections are combined with an oil change by using the product. For this reason the execution can be done at the same time. The results are shown on a combined result sheet of PRO-TEC (see appendix).</p>	

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Evaluation

Dirt dilution								
	1. Test		2. Test		3. Test		Average	
	Particle size (nm)	Count Rate (1000 Counts/s)	Particle size (nm)	Count Rate (1000 Counts/s)	Particle size (nm)	Count Rate (1000 Counts/s)	Particle size (nm)	Count Rate (1000 Counts/s)
Waste oil	234,8	87,3	234,3	84,8	234,7	77,4	234,6	83,2
Waste oil/new oil	235,7	76,4	234,0	76,0	233,8	75,9	234,5	76,1
Waste oil / Engine Flush	232,2	68,9	232,2	72,8	234,5	74,4	233,0	72,0

Result evaluation

During this investigation the behaviour of "Neways Roil Platinum Engine Flush" on the colloidal particles already dispersed in the oil was tested. The effect of engine oil additives is based on dispersing soot particles in order to prevent the deposit and the agglomeration on surfaces as well as the resulting viscosity increase of the oil.

It can be seen that the waste oil already used has an almost mono-disperse particle size distribution with an average diameter of 234,6 Nm and a poly dispersity index of only 0,007. Fresh oil is however almost particle-free, what can be seen from the extremely low average impulse rate (Average Count Rate) of only 342.9 counts per second, unlike 83.200 counts per second for waste oil.

Under the test conditions the average diameter of the used waste oil does not change substantially after the addition of 7,5% new oil or of 7,5% "Neways Roil Platinum Engine Flush". The reduction of the count rate from 83,2 to 76,1 kcps (kilo counts per second) by adding fresh oil corresponds to the dilution effect (theoretical value: 77,4 kcps). The stronger reduction of the count rate to a value of 72,0 by adding "Neways Roil Platinum Engine Flush" indicates a reduction of the particle number going beyond the dilution effect. This means that a part of the dirt particles to be determined has dissolved or became smaller so that the particles cannot be proven anymore with the applied analysis technology.

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The dirt dissolution in molecularly disperser form can be determined.
The optimal flush out of all contaminations can be reached by draining the waste oil
and the Neways Roil Platinum Engine Flush.

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Friction test				
Friction test without additives				
Test body	Weight [g]		Friction [mg]	
No.	before	after	Difference	Average
71	8,51615	8,43767	78.480	-
Neways Roil Platinum Engine Flush				
Test body	Weight [g]		Friction [mg]	
No.	before	after	Difference	Average
74	8,51561	8,51536	250	270
75	8,51347	8,51326	210	
76	8,51381	8,51322	590	
92	8,51091	8,51069	220	
93	8,51566	8,51554	120	
94	8,51533	8,51514	190	
U1	8,50858	8,50833	250	
U2	8,51231	8,51209	220	
U3	8,51903	8,51865	380	
Engine oil 0W40				
Test body	Weight [g]		Friction [mg]	
No.	before	after	Difference	Average
89	8,51336	8,51335	10	21,7
90	8,51213	8,51211	20	
91	8,51689	8,51685	40	
U4	8,52117	8,52114	30	
U5	8,51762	8,51761	10	
U6	8,51413	8,51411	20	
Engine oil 10W40				
Test body	Weight [g]		Friction [mg]	
No.	before	after	Difference	Average
86	8,51618	8,51616	20	28,3
87	8,51588	8,51586	20	
88	8,51272	8,51271	10	
U10	8,50839	8,50833	60	
U11	8,50906	8,50904	20	
U12	8,50891	8,50887	40	

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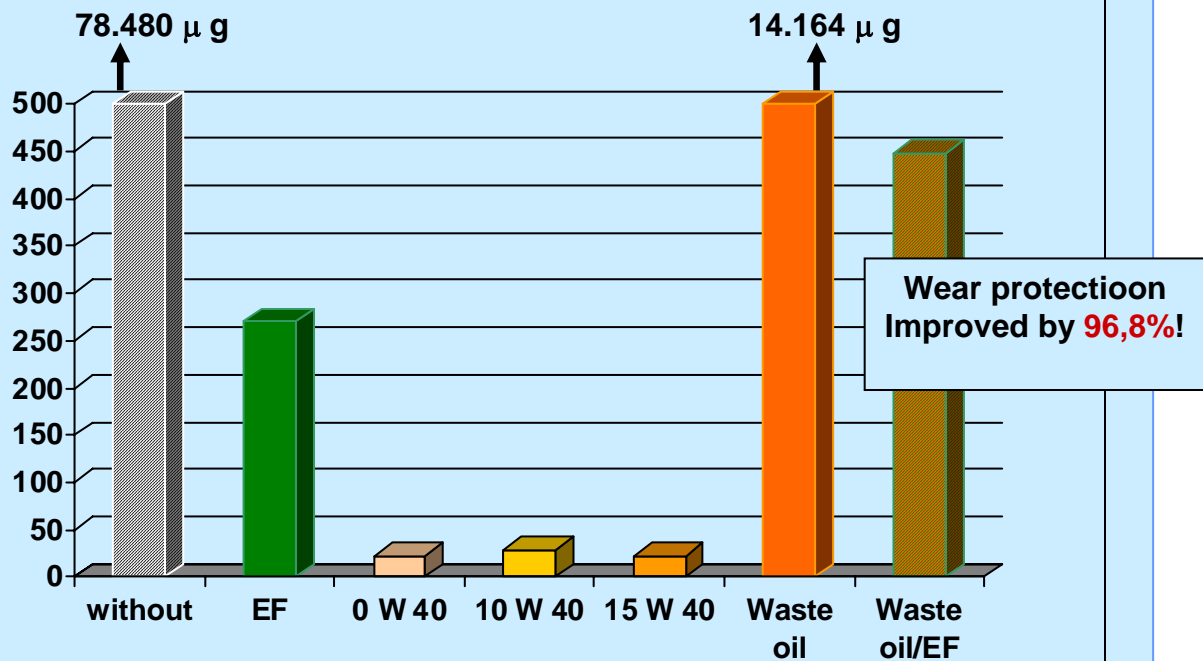
Friction test				
Engine oil 15W40				
Test body	Weight [g]		Friction [mg]	
No.	before	after	Difference	Average
83	8,51216	8,51213	30	21,7
84	8,51014	8,51013	10	
85	8,51867	8,51864	30	
U16	8,51227	8,51224	30	
U17	8,509	8,50899	10	
U18	8,50953	8,50951	20	
Waste oil without Neways Roil Platinum Engine Flush				
Test body	Weight [g]		Friction [mg]	
No.	before	after	Difference	Average
65	8,51797	8,51243	5.540	14.167
66	8,51097	8,48955	21.420	
68	8,51132	8,50448	6.840	
69	8,51508	8,50758	7.500	
70	8,514	8,48448	29.520	
Waste oil with Neways Roil Platinum Engine Flush				
Test body	Weight [g]		Friction [mg]	
No.	before	after	Difference	Average
56	8,5145	8,51398	520	448
57	8,51236	8,51189	470	
58	8,51303	8,5124	630	
59	8,51002	8,5094	620	
60	8,51434	8,51377	570	
61	8,51779	8,51767	120	

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Friction test



Result evaluation

The investigations showed that the application of the product Neways Roil Platinum Engine Flush (EF) generates a wear protection. For comparison the tests were carried out with fresh engine oil. If you compare the new oil with the 15.000 km driven waste oil you can see that the wear protection falls substantially. By using Neways Roil Platinum Engine Flush in accordance with the dosing instruction for passenger cars, the wear protection of the waste oil could be regenerated or improved by around 96,8 %. The use of the product Neways Roil Platinum Engine Flush leads to no damage. On the contrary - the waste oil is upgraded.

This effect is reached by the entry of fresh wear protection components into the waste oil in combination with the reduction of the baking characteristics of the dirt particles.

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Emission reduction					Compression test				
Example 1									
Engine type:	Gasoline				Kilometer:				120.000
Emission	before				after				Result
CO (%)	0,35				0,00				reduced by 100 %
HC (ppm)	134				9				reduced by 93 %
CO ₂	14,9				15,1				-
Compression	before				after				(Kp. after - Kp. before) *100
Cylinder	1	2	3	4	1	2	3	4	Kp. before
Compression pressure	12,0	9,4	9,8	12,2	12	10,5	10,9	12	improved by 4,6 %

Example 2									
Engine type:	Gasoline				Kilometer:				33.540
Emission	before				after				Result
CO (%)	0,0				0,04				0,0
HC (ppm)	0				0				0,0
CO ₂	15,1				14,1				0,0
Compression	before				after				(Kp. after - Kp. before) *100
Cylinder	1	2	3	4	1	2	3	4	Kp. before
Compression pressure	13,5	12,1	7,9	-	14,1	14,0	14,5	-	improved by 21 %

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Result evaluation

For the evaluation extensive data was available. This can be examined at PRO-TEC. The a. m. test results were carried out at the PRO-TEC company. The exhaust gas values of the vehicle and the compression were measured before the use of Neways Roil Platinum Fuel Treatment. After the use, the measurements were repeated.

Example 1

The investigations showed that the compressions in the single cylinders were optimized. The emission values for the parameters CO and HC are reduced. This means that the fuel burn in the engine runs again optimally and the engine power is available again.

Example 2- b

The measured values in the example 2-b do not show any significant effect regarding the emission reduction. That can be explained by the fact that in this vehicle the fuel system cleaning was done already before (see example - a).

The compression is improved by around 21,4. Using the two products Neways Roil Platinum Fuel Treatment and Neways Roil Platinum Engine Flush you can reach a total compression optimization of 46% and an improvement of the emission data of around 100%.

Arnstadt, June 30, 2003

T. Heßler
TÜV Thüringen Anlagentechnik GmbH

Remark:

Translation into English language carried out by CTP GmbH / PRO-TEC Deutschland in July 2009.

The present document only represents the English translation of a German text. In case of doubt on the meaning of this translation, the German text version is legally binding.