エコナノ
Eco nano®

www.eco-nano.jp

APRIL 2020
VAB CO.,LTD.

DETAILS OF ECO NANO

What is ECO NANO?

Content: Nano-sized particles (titanium) specially processed for oil lubricant
(International Patent Application Filed)

For passenger vehicle, use 1g (containing about 17 billion powdery particles)
※Surface Area 52m^2

Property

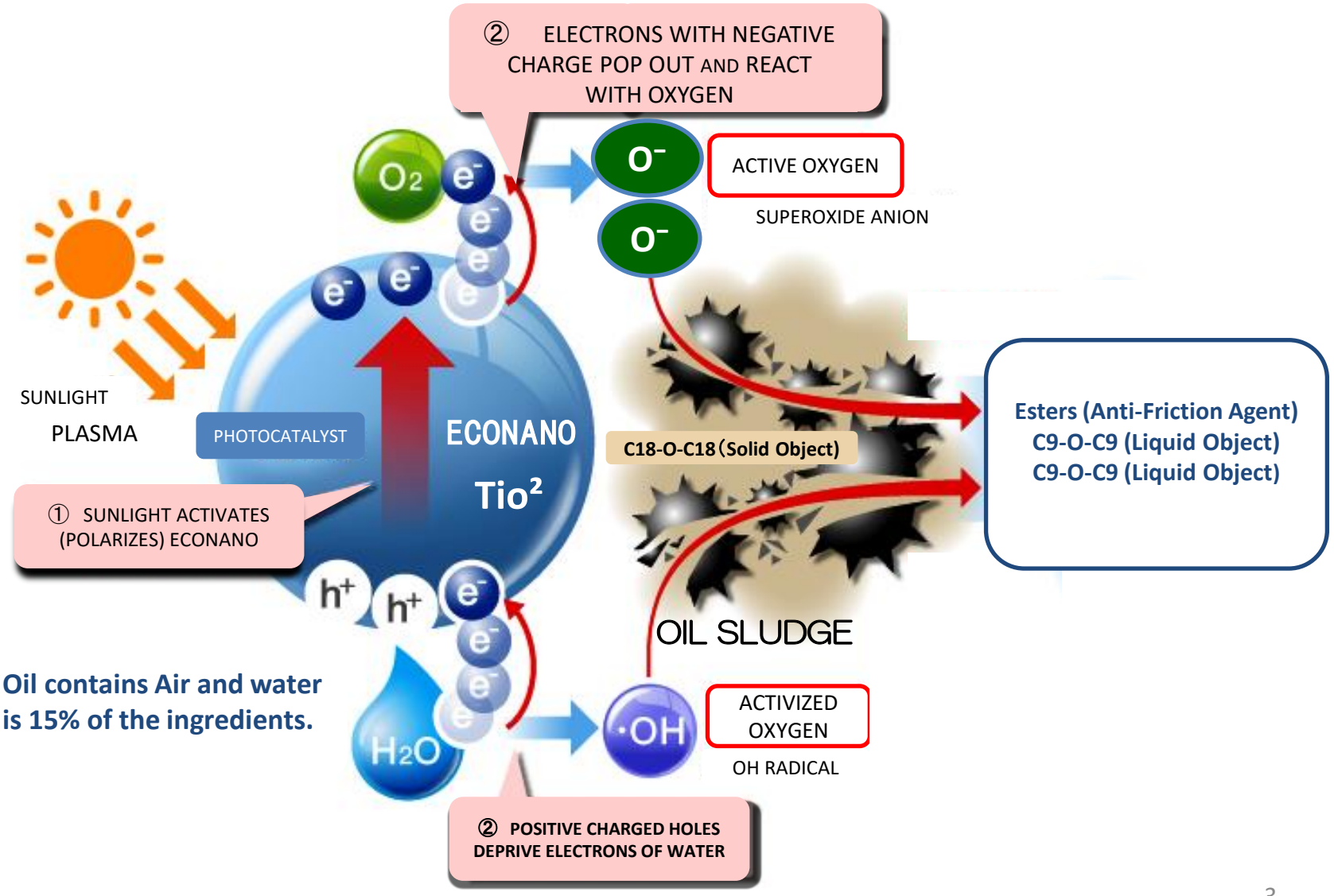
ECO NANO reacts to plasma generated by friction of metal parts in the engine, and decomposes substances, such as oil sludge, slime, dart, and so on by photocatalyst (ion) effect. Since nano-sized particles are smaller than oil molecules, ECO NANO is non-toxic and non-aggressive to the engine or metal surface.
ECO NANO is a reliable environmental countermeasure product.

EFFECT of ECO NANO:

- Improve boundary flowing lubrication (or reduce friction loss)
- Improve combustion efficiency (decrease smell of exhaust gas, reduce blow-by gas, improve quietness, etc.)
- Decompose oil sludge, etc. Reduce toxic substances such as CO, HC, Nox, CO_2
- Decrease CO_2 emission by 1% per km during travelling (proved by the test by the Construction and Transportation Ministry in Japan
- Instant effect (immediate reduction and apparent physical feeling)

※ Physical feeling varies depending on vehicle condition and between individuals.

DETAILS OF ECONANO / WHAT IS PHOTOCATALYTIC EFFECT?



Engine Oil contains Air and water which is 15% of the ingredients.

CO_2 REDUCTION PROVED

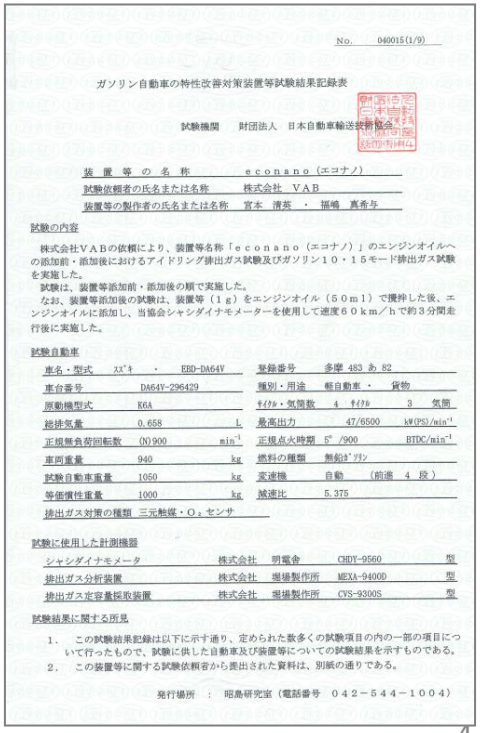
Reliable CO_2 Reduction

Since the product is an environmental countermeasure, 10.15 mode test and emission gas test have been performed according to the standard of the Construction and Transportation Ministry in Japan. The test results proved about 15 reduction of CO_2 emission per km. Similar results have not been proven to other additives. Moreover, ECO NANO reduces other toxic substances.

You can provide safety environmental countermeasure with ECO NANO.

EXHAUST GAS TEST AND FUEL CONSUMPTION RATE IN 10.15 MODE TRAVELLING STATE
Examining Body: Japan Automobile Transportation Technology Association
Tested Vehicle: SUZUKI EVERY DA64V

CLASSIFICATION		BEFORE ADDITION				AFTER ADDITION			
DATE OF TEST		June 25, 2010				June 25, 2010			
KH(Humid Correction Efficiency)		0.965				0.937			
EMISSIONS GAS	CONTENT MEASURING METHOD	CO ppm NDIR	HC ppmC FID	NOx ppmC CLD	CO_2 ppmC CLD	CO ppm NDIR	HC ppmC FID	NOx ppmC CLD	CO_2 ppmC CLD
	DILUTED EXHAUST GAS CONCENTRATION	52.04	2.96	0.88	0.763	49.96	2.92	0.74	0.762
	DILUTED AIR CONCENTRATION	0.63	2.15	0.01	0.041	0.81	2.16	0.03	0.043
	NET CONCENTRATION	51.45	0.93	0.87	0.725	49.19	0.88	0.71	0.722
	EXHAUST AMONT g/km	0.729	0.006	0.019	160.6	0.696	0.006	0.015	159.9
	COLLECTION AMOUNT m^3/min	4.6				4.6			
	FUEL CONSUMPTION RATIO(CARBON BALANCE METHOD) km/L	14.7				14.8			



No. 040015(1/9)

ガソリン自動車の特性改善対策装置等試験結果記録表

試験機関　財団法人　日本自動車輸送技術協会

装置等の名称　econano（エコナノ）
試験依頼者の氏名または名称　株式会社　VAB
装置等の製作者の氏名または名称　宮本　清英　・　福嶋　真希与

試験の内容

株式会社VABの依頼により、装置等名称「econano（エコナノ）」のエンジンオイルへの添加前・添加後におけるアイドリング排出ガス試験及びガソリン10・15モード排出ガス試験を実施した。
試験は、装置等添加前・添加後の順で実施した。
なお、装置等添加後の試験は、装置等（1g）をエンジンオイル（50ml）で攪拌した後、エンジンオイルに添加し、当協会シャシダイナモメーターを使用して速度60km／hで約3分間走行後に実施した。

試験自動車

車名・型式	ｽｽﾞｷ ・ EBD-DA64V	登録番号	多摩 483 あ 82
車台番号	DA64V-296429	種別・用途	軽自動車 ・ 貨物
原動機型式	K6A	ｷｬﾌﾞﾚﾀ・気筒数	4 ｻｲｸﾙ 3 気筒
総排気量	0.658 L	最高出力	47/6500 kW(PS)/min⁻¹
正規無負荷回転数	(N)900 min⁻¹	正規点火時期	5°/900 BTDC/min⁻¹
車両重量	940 kg	燃料の種類	無鉛ｶﾞｿﾘﾝ
試験自動車重量	1050 kg	変速機	自動 （前進 4 段）
等価慣性重量	1000 kg	減速比	5.375
排出ガス対策の種類	三元触媒・O₂センサ		

試験に使用した計測機器

シャシダイナモメータ	株式会社　明電舎	CHDY-9560	型
排出ガス分析装置	株式会社　堀場製作所	MEXA-9400D	型
排出ガス定容量採取装置	株式会社　堀場製作所	CVS-9300S	型

試験結果に関する所見

1．　この試験結果記録は以下に示す通り、定められた数多くの試験項目の内の一部の項目について行ったもので、試験に供した自動車及び装置等についての試験結果を示すものである。
2．　この装置等に関する試験依頼者から提出された資料は、別紙の通りである。

発行場所　：　昭島研究室（電話番号　042－544－1004）

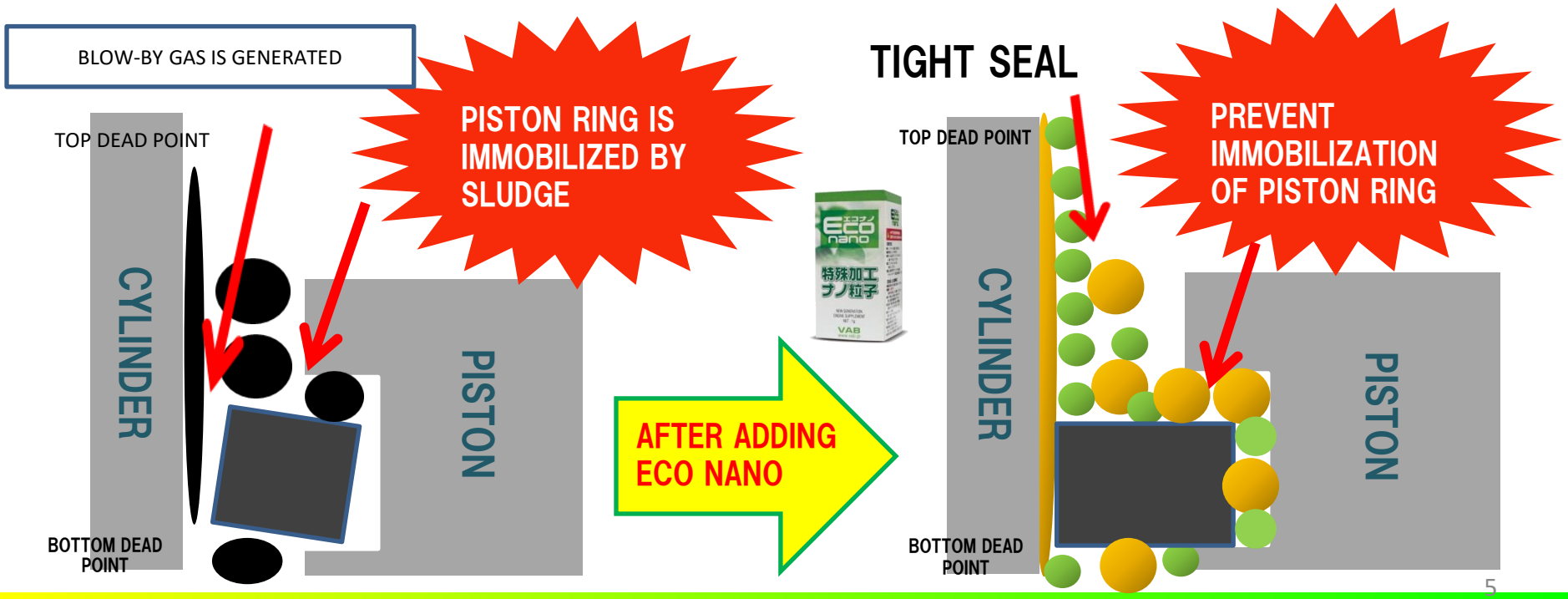
DETAILS OF EFFECT/INTERIOR OF ENGINE

WHAT IS HAPPENING IN ENGINE?

Usually, the oil film is not formed at the top dead point and the bottom dead point of the piston. Temperature of the piston and the cylinder reaches about 330℃, generating sludge or the like and immobilizing the piston ring to restrict movement of the piston.

When you add ECO NANO, the oil film is formed at the top and bottom dead points of the piston to allow smooth movement of the piston. Further, the sludge is decomposed by the photocatalytic effect, avoiding immobilization of the piston ring.

ECO NANO improves combustion efficiency, minimizes blow-by gas, when combustion is incomplete, and fuel dilution, and decreases CO_2 in the exhaust gas during travelling.



HOW TO ADD ECO NANO

WITH ENGINE OIL:

- Pour about 100ml engine oil in use into an ECO NANO bottle.
- Put 1 to 2 bags (0.5 to 1g) of ECO NANO in the bottle (the amount of use differs for vehicle).
- Shake the bottle very well not to leave ECO NANO in the bottle.
- Pour the mixture through the oil filler cap.
- Repeat above steps if ECO NANO is left in the bottle.
- When exchanging the engine oil, complete the above steps and add a proper amount of engine oil in the end.
- Idle the vehicle for about 5 minutes, and you can check the instant effect.

WITH ENGINE FILTER:

- Put ECO NANO (powder) directly in the oil filter before installing the oil filter to the engine. A relatively large pressure is being applied to the engine filter. Since ECO NANO particles are smaller than oil particles, ECO NANO does not remain in the filter and diffuses into the oil.

CAUTION: Be sure to put ECO NANO from inlet holes of the oil filter.

HOW TO ADD ECO NANO

Basically, add 1 bag (0.5g) ECO NANO to 2 to 4 liters of engine oil.
Add 2 bags (1g) ECO NANO to 4 to 6 liters of engine oil.
Similar ratio should be applied for smaller amount of oil.
(e.g., in the case of 50cc displacement engine, add 0.2g ECO NANO for 1 liter engine oil).

Be sure to clear up doubtful points before use.

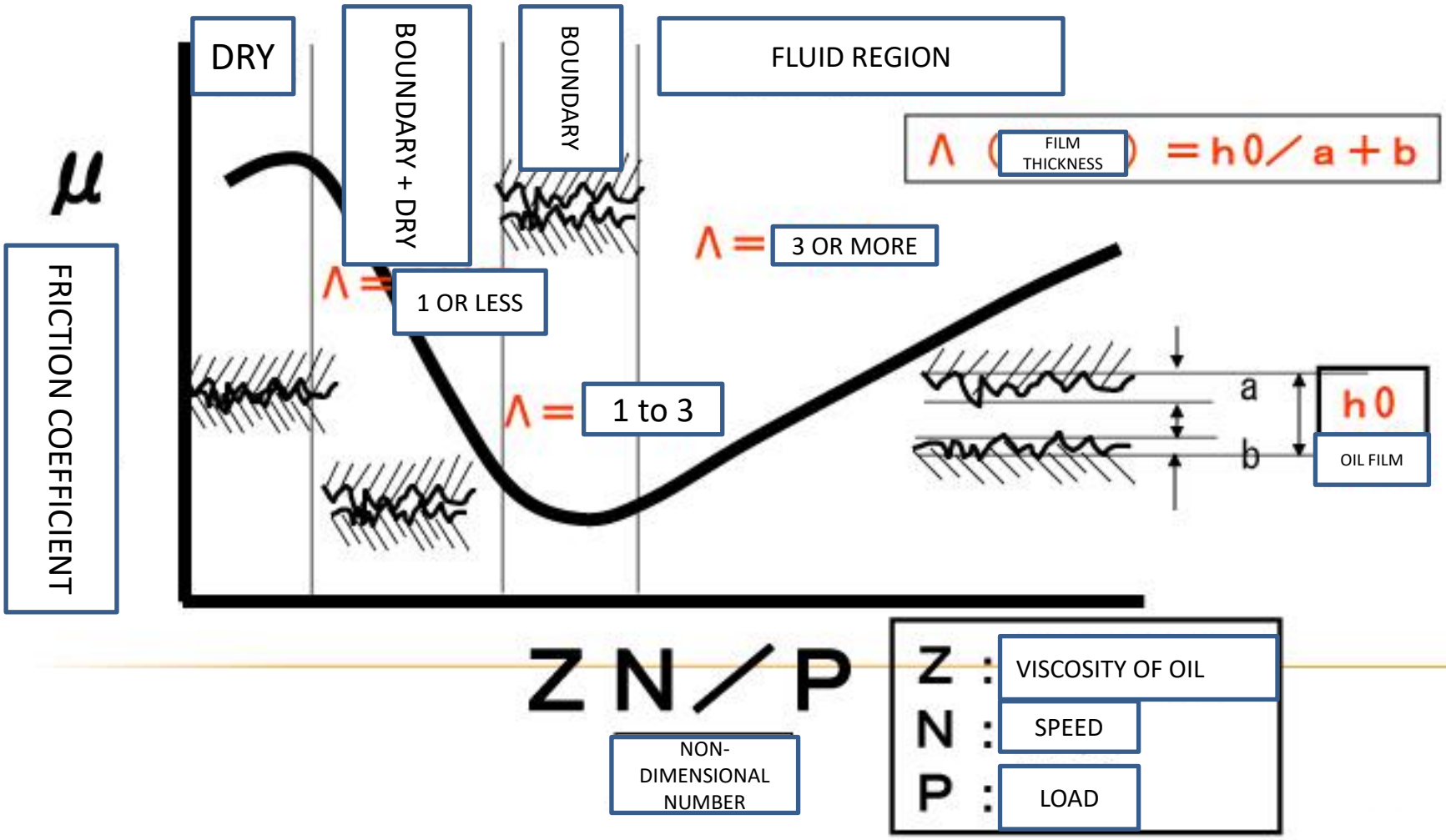
- Use oil viscosity recommended by manufacturer.

- Use amount of oil recommended by manufacturer.

- Be careful not to pour excess amount of ECO NANO.

If used excessively, ECO NANO does not only deteriorate fuel consumption, but also might damage the engine. Monitor the amount of use carefully.

LUBRICATING AREA ACCORDING TO STRIBECK CURVE

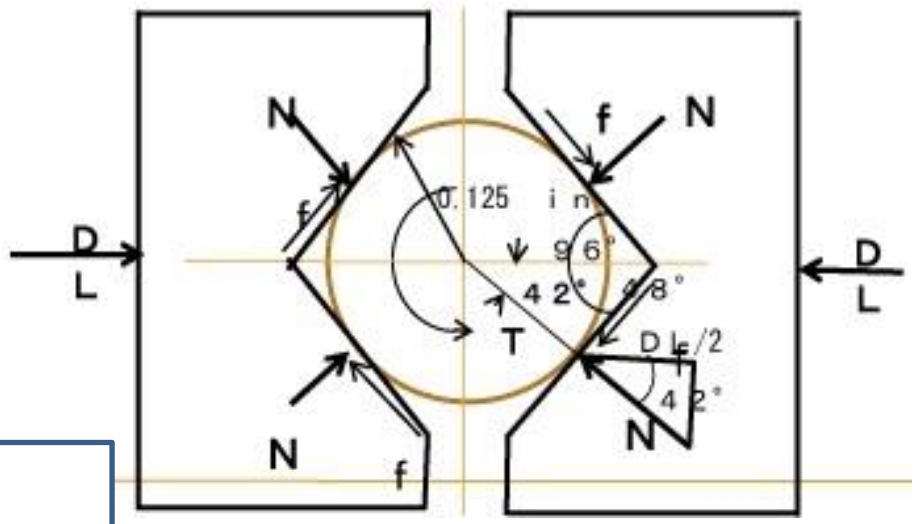


CHECK BY ABRASION TEST

ABRASION TEST RESULT WITH HIGH-SPEED Pin-VeeBlock ABRASION TESTER (IN CONFORMANCE WITH ASTM-D3233)

TEST CONDITIONS:

LOAD	: 1334n (300lbs)
SPEED	: 0.4m/s (1200rpm)
TIME	: 60min
LUBRICANT OIL	: VISCOSITY GRADE 0w−20
	GASOLINE ENGINE OIL
	100ml



EVALUATION: ABRASION AMOUNT, ABRASION COEFFICIENT, TEMPERATURE

TEST RESULT

TABLE 1

WEIGHT DECREASE BY ABRASION

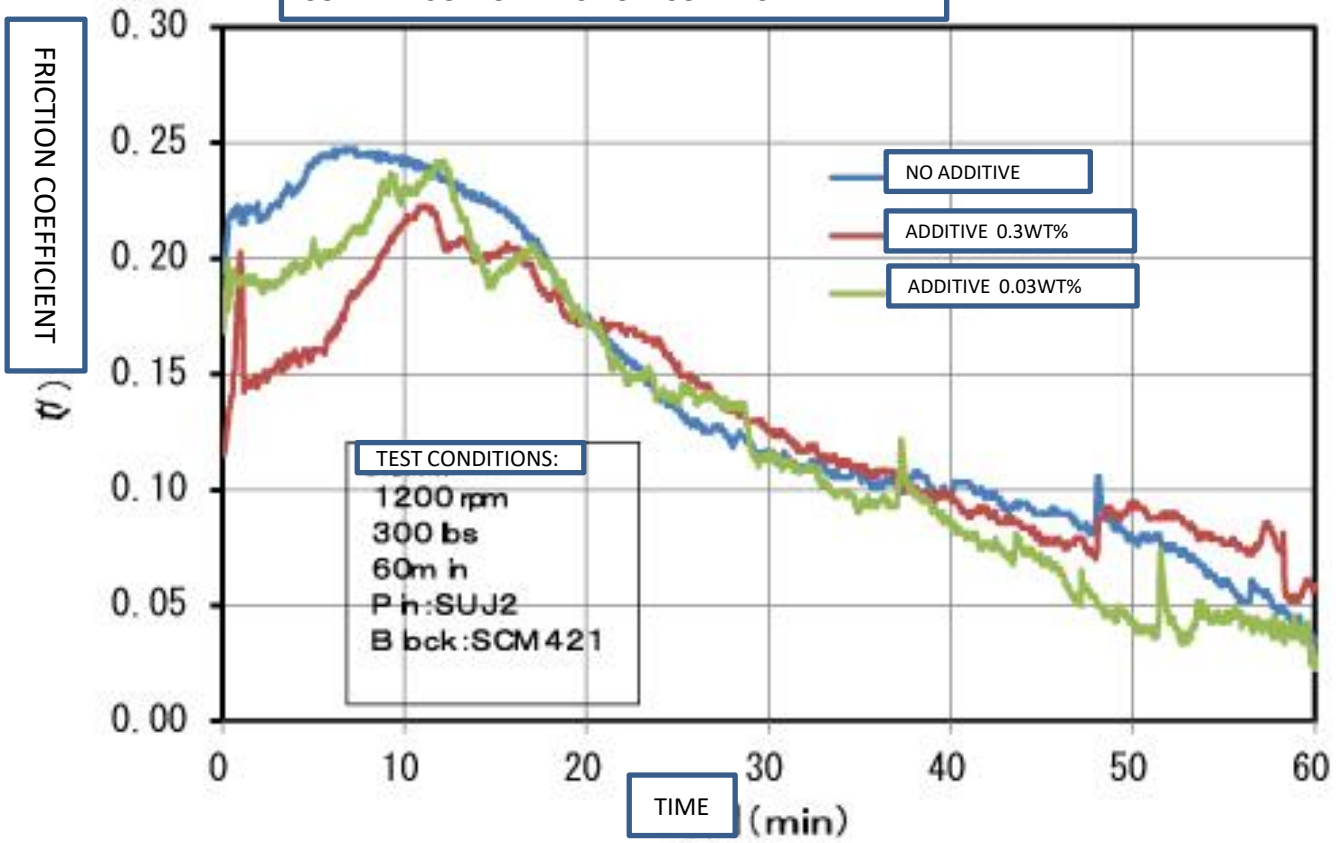
UNIT: mg

SITE	ADDITIVE AMOUNT (wt%) 0	0.03	0.3
Pin	0.7	0.4	0.4
Vee—Block	0.2	0.4	0.1
TOTAL	0.9	0.8	0.5

GRAPH 1

HIGH-SPEED Pi-VeeBlock ABRASION TESTER

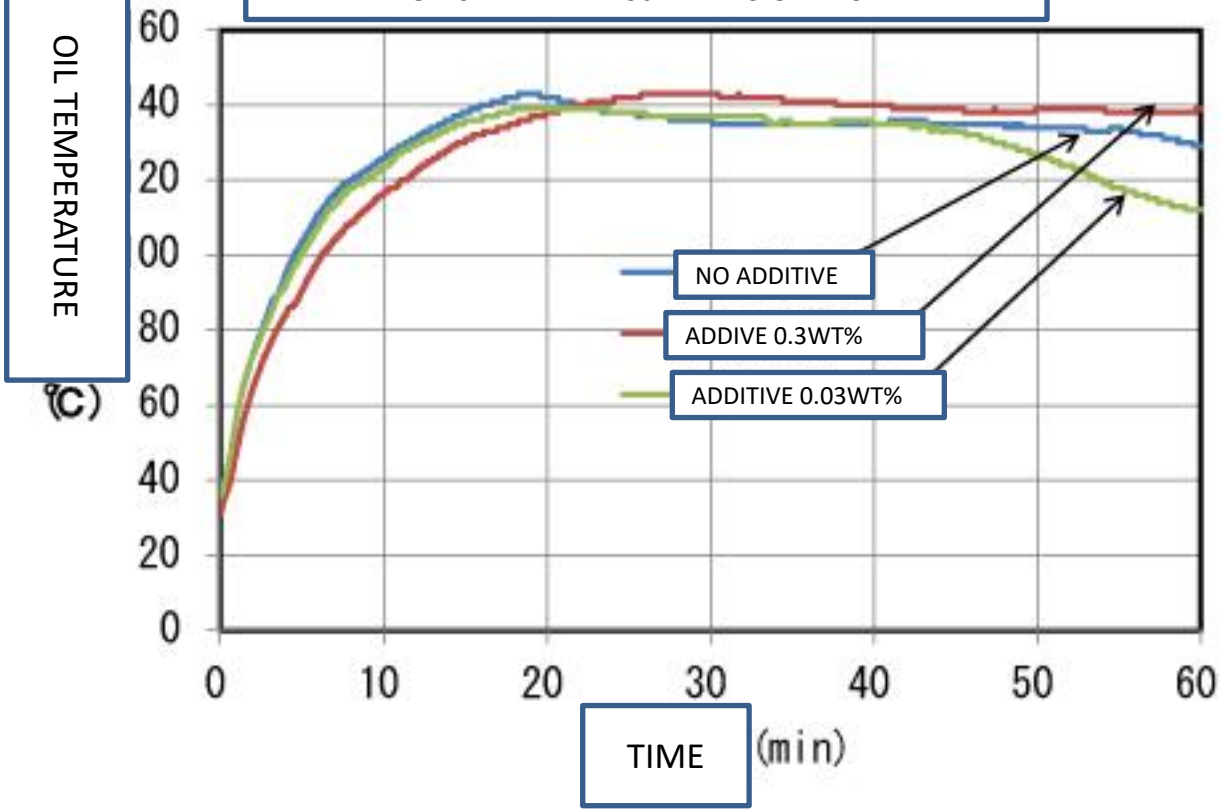
COMPARISON OF FRICTION COEFFICIENT



GRAPH 2

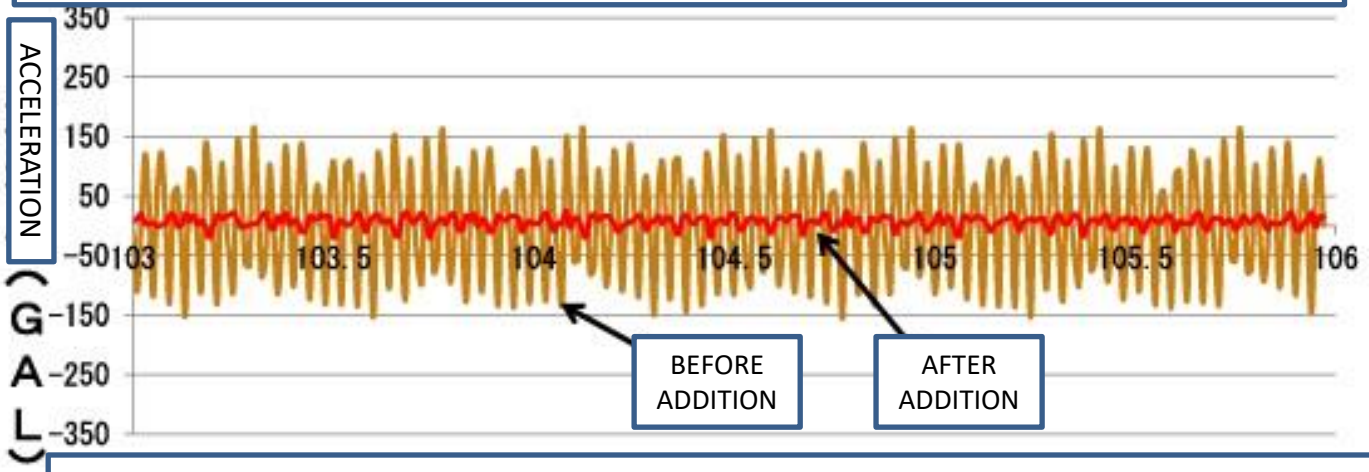
COMPARISON OF OIL TEMPERATURE

HIGH-SPEED Pin-Block ABRASION TESTER

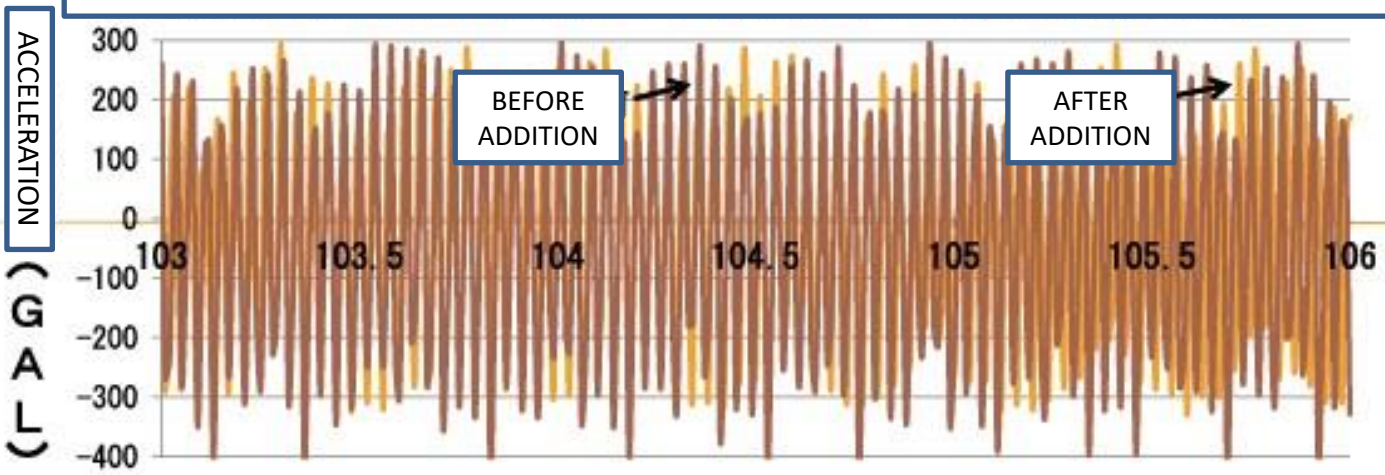


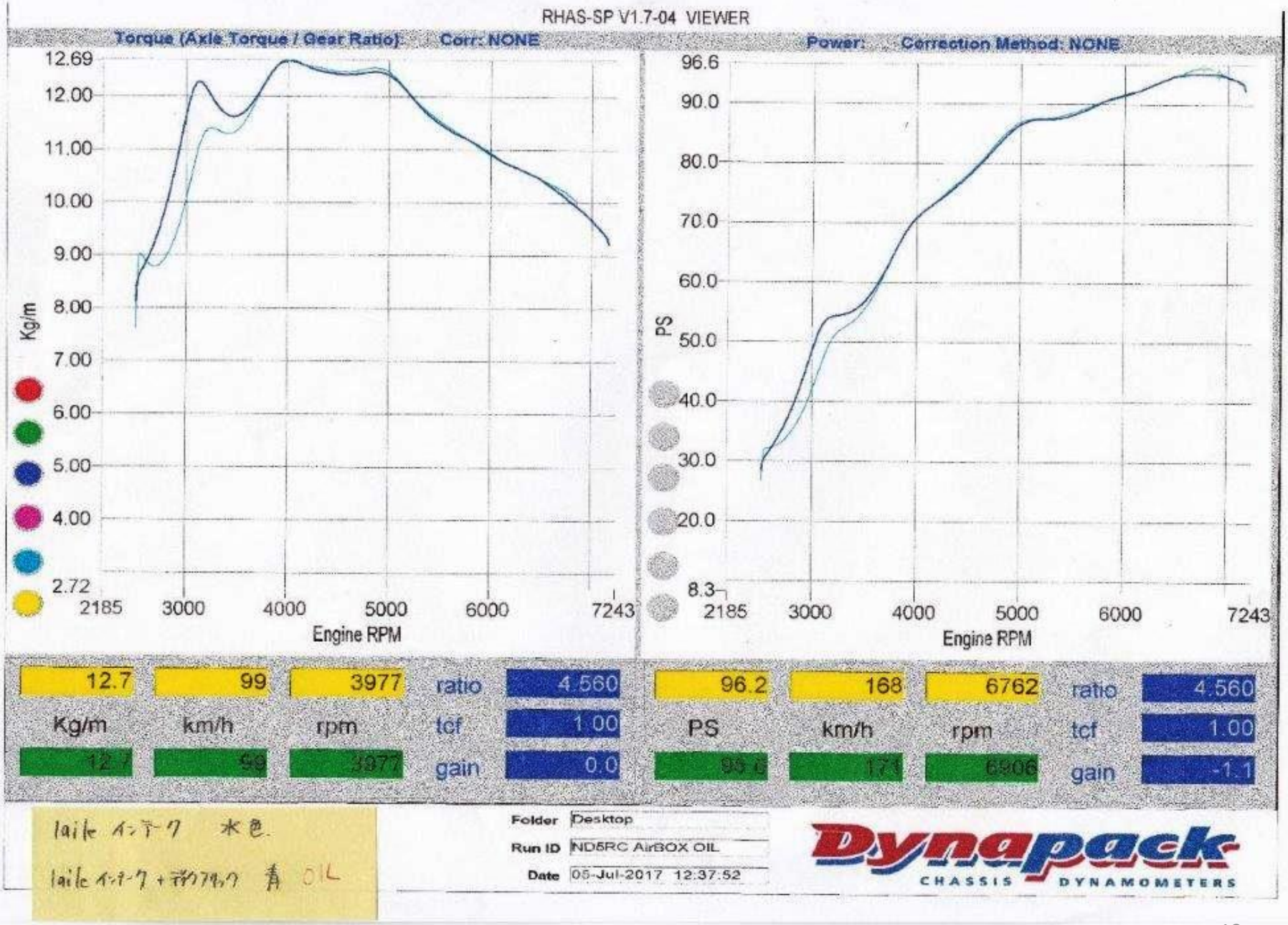
MEASUREMENT OF ENGINE VIBRATION

COMPARISON OF ACCELERATION ALONG X-AXIS IN LATTER HALF OF TEST TIME BETWEEN 103 SEC AND 106 SEC



COMPARISON OF ACCELERATION ALONG Y-AXIS IN LATTER HALF OF TEST TIME BETWEEN 103 SEC AND 106 SEC




RHAS-SP V1.7-04 VIEWER
Torque (Axle Torque / Gear Ratio)
Corr: NONE
Power:
Correction Method: NONE
Kg/m
PS
Engine RPM
12.7
99
3977
ratio
4.560
Kg/m
km/h
rpm
tcf
1.00
gain
0.0
96.2
168
6762
ratio
4.560
PS
km/h
rpm
tcf
1.00
gain
-1.1
laile インテーク 水色
laile インテーク+ディフューザー 青 OIL
Folder Desktop
Run ID ND5RC AirBOX OIL
Date 05-Jul-2017 12:37:52
Dynapack
CHASSIS DYNAMOMETERS