Grown Fuel

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12/9/2006

ENRC Biofuels Submission

Upfront I would like to commend the government for its commitment to renewable energy and encourage this and future governments to base decisions on science and strengthen its environmental initiatives ten fold. Future generations will thank you.

Un like many biodiesel industry people I am fully supportive of and actively promoting de centralised biodiesel production, it is the way of the future. Smaller biodiesel plants in regional areas and even on farm reduces transport, supports people in regional areas by value adding the commodities keeping dollars in there town which helps keep local economies viable.

Who is Grown Fuel?

Grown Fuel is a biodiesel consultancy owned and run by Paul Martin. Grown Fuel is currently working on a biodiesel production facility in western Victoria (www.wimmerabiodiesel.com.), and consulting on biodiesel production in New Zeeland and Western Australia. Grown fuel also publishes and sells the book 'Biodiesel for the Small Producer'.

About Paul Martin, excerpt from 'About the Author':

In 2000 Paul Martin kicked the fossil fuel habit; that year fuel prices passed $1 per litre for the first time. Paul launched the first campaign in Australia to raise awareness of biodiesel. This included founding the Biodiesel Association of Australia and the Australian Biodiesel Group (now a public company) and he opened the first biodiesel bowser in Australia. In 2002 Paul started the first dedicated biodiesel consultancy in Australia; Grown Fuel, which is his core work today. Grown Fuel first offered biodiesel process technology in 2005.

Not forgetting his roots, Paul is still a keen promoter of quality biodiesel made on a small or large scale as a way of reducing greenhouse gas emissions. A Strong believer in leading by example he has always had a car and has only spent $120 on fossil diesel since 2000.

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How can the Victorian Government support the development of biofuels?

1. The government should adopt a policy platform that supports a fuel excise exemption for small scale biodiesel producers that are producing biodiesel for there own needs and/or less than 20 000 litres of biodiesel per year.

2. Use B20 (20% biodiesel in fossil diesel) in any state owned diesel vehicle.

3. Mandate the use of B20 by any contractors working on state funded projects.

4. Use the fuel, lead by example as above.

5. Supporting via policy an excise exemption for small scale biodiesel production as above. An excise exemption requires an excise amendment at federal government level.

6. Encourage regional towns to start investing in there own crush mills and biodiesel plants, the size of which would be geared to the production of oil seeds from the local community.

7. Amend to include biodiesel and follow through of the Hon Peter Hall's motion.

8. Fund a web site which promotes education on the issue of life cycle emissions.

9. Promote clear labelling laws which display the source of the biodiesel, allowing consumers to make an informed choice.

10. Fund the research needed, does biodiesel from all sources really reduce emissions. Is the use of this fuel expediting tropical rainforest clearing for example.

11. The government should mandate that the use of fuel in Victoria include 10% ethanol in petrol and 20% biodiesel in diesel where available.

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Support and promote small scale biodiesel production.

1. The government should adopt a policy platform that supports a fuel excise exemption for small scale biodiesel producers that are producing biodiesel for there own needs and/or less than 20 000 litres of biodiesel per year.

The current fuel excise tax system is geared toward industry, making it un-economical to produce less than 50 000 litres biodiesel per week. The same tax rules apply wether someone is making 50 or 5 million litres of biodiesel per week.

Beer is an example of an excisable product that currently attracts an excise tax where as home brew beer is exempt form excise when being made for personal consumption and not for sale. Biodiesel being made and used under the same circumstances, for farm and family use, under the same logic, should also be excise tax exempt.

Note a: Off road use of fossil diesel does not attract excise tax, or rather is exempt, so why should a farmer making biodiesel for 'off road use' have to pay it? This situation actively discourages uptake of biodiesel.

Note b: It has been mentioned that it costs $1000 to $2000 to test biodiesel to the Australian standard. When testing biodiesel you usualy test for the whole standard periodically but week to week certain variable parameters, not the whole standard, are checked.

Testing procedure for a biodiesel plant that is up and running that I have consulted to:

For every 50 000 litres of biodiesel produced tests for the following are conducted:

- Acid Number
- Water
- Free Glycerine
- Total Glycerine
- Ester Content
- Viscosity

Cost from T&S lab with a 2 day turn around = $275

Periodically 6 times per year:

- The whole standard.

Cost from T&S lab with a 2 day turn around = $850

Note c: this does not include the Cetane number as this test costs around $1500 if it can be obtained in Australia. Cetane does not indicate whether the fuel will cause damage to an engine so is considered less important.

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References:
Biodiesel Excise Exemption Reform (BEER) was set up to raise awareness and lobby for an excise exemption. www.biodiesel.id.au

T&S Lab price list attached. Note T&S Lab are the most experienced lab for testing biodiesel in Australia to date. 3 commercial Australian biodiesel manufactures that I know of currently use T&S as there testing facility.

Lead by example – The state government should be using biodiesel.

2 Use B20 (20% biodiesel in fossil diesel) in any state owned diesel vehicle.

3 Mandate the use of B20 by any contractors working on state funded projects.

This commitment will help with consumer confidence/uptake, while significantly reducing government related green house emissions.

An opportunity exists to use biodiesel in a high profile setting to solve a health issue. Southern Cross station has a problem with diesel emissions which could be greatly reduced with the use of biodiesel. This would help a genuine problem with a proven method of reducing emissions while demonstrating the government's commitment to the use of biodiesel and to reducing green house emissions. This represents a simple win/win solution that would only cost around $5000 to implement.

References:
RTA emissions testing attached.

Support and promote regional biodiesel production.

The benefits of bio-fuels to Victoria can be fostered through government initiative by:

4 Using the fuel, lead by example.

5 Supporting via policy an excise exemption for small scale biodiesel production as above. An excise exemption requires an excise amendment at federal government level.

6 Encourage regional towns to start investing in there own crush mills and biodiesel plants, the size of which would be geared to the production of oil seeds from the local community.

7 Amend to include biodiesel and follow through of the Hon Peter Hall's motion.

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During Parliamentary debate (Hansard Legislative Council 55th parliament 1st session Wednesday 29 march 2006 extract from book 3) a motion was moved by The Hon Peter Hall supporting the use of ethanol in the government fleet in recognition of the benefits to rural Victoria.

The Austrian towns of Müreck and Güsing are an excellent example of government leadership on the bio fuels issue and in my view represent a model which the Victorian Government should adopt for regional Victoria. These rural Austrian towns represent a future vision and natural progression for country towns in Victoria in terms of domestic de centralised bio-fuel production.

These towns:

- Crush there own canola.
- Make diesel from the canola oil.
- Feed animals the canola meal.
- Generate biogas and with that electricity from the canola glycerine, animal poo and surplus fodder.

In Austria and Germany they do have commercial sized biodiesel plants. In recent times small oil seed crush mill sales are booming as more and more farmers value add there canola crop on farm as opposed to simply selling a commodity – the oil seed. It is a natural progression - the way of the future, let us recognise the benefits and support such initiatives now.

Case in point Müreck 3 hours from Vienna:
Biodiesel: 6000 ton P/A. Biogas: 1 MW generator. Heat for central heating from woodchip.

Started in 1984 as a co-op it now includes 590 members who grow canola and benefit from €5 million being kept in there town instead of being spent on diesel and electricity from else where.

Biogas plant. Woodchip, Boiler fuel

Canola oil storage. Biodiesel plant.

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The future of bio-fuel can be in decentralised production, where the income and flow on effects stay in regional towns.

Reference:

Stevens Hobbs is an expert in the field:
http://www.bebioenergy.com/agronomy_conference.htm
11 Annual Agronomy Conference

Hansard, a motion was moved by The Hon Peter Hall:
http://www.parliament.vic.gov.au/downloadhansard/pdf/Council/Autumn%202006/Council%20Extract%2029%20March%202006%20from%20Book%203.pdf#search=%22steven%20hobbs%20kaniva%20biodiesel%20vegetable%20oil%22

Scroll down to page 983.

Help consumers to differentiate between biodiesel made from different feedstocks.

The government should help consumers to differentiate between biodiesel made from different feedstocks by:

8 Fund a web site which promotes education on the issue of life cycle emissions.

9 Promote clear labelling laws which display the source of the biodiesel, allowing consumers to make an informed choice.

10 Fund the research needed, does biodiesel from all sources really reduce emissions. Is the use of this fuel expediting tropical rainforest clearing for example.

Bio-fuel production is not innately environmentally friendly and attention needs to be payed to feed stock sources and the potential environmental consequences of their production and use. Certain feed stocks, such as Palm Oil are currently driving large scale tropical rain forest deforestation.

A ‘green wash’ is emerging. (Green washing; ‘the appropriation of environmental terminology to mask environmentally unsound practices as clean and green)

Biodiesel made from used cooking oil has the lowest emissions of any automotive fuel according to many studies including those undertaken by the CSIRO. This is because the emissions generated from growing canola are attributed to the cooking oils original use. Some biodiesel manufactures are using this low emission status to sell there product and conveniently ignoring the true environmental implications of their feedstock production.

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Life cycle emissions analysis for biodiesel made form Palm Oil need to include the production of feedstock, including the clearing of tropical rainforest for palm plantations, like that currently occurring at unprecedented levels in Borneo and Sumatra.

Positive environmental outcome as a result of biofuel production and use should not be marred by the importation of environmentally dubious foreign feedstocks.

Reference:
Biodiesel web site raising awareness about the source and impacts of biodiesel from different sources. www.bkig.org

On the ground information about tropical rainforest destruction resulting from palm oil plantations. http://www.orangutan.or.id/?language=en

Mandate B20 and E10 biofuel blends.

11 The government should mandate that the use of fuel in Victoria include 10% ethanol in petrol and 20% biodiesel in diesel where available.

Keeping in mind that the current boom in the biodiesel industry is based on the fossil oil price. The above will help the biofuel industry to whether a drop in the oil price making investments more stable and hence more attractive.

T&S

Laboratory Services

T&S are a NATA accredited public testing facility who provide testing services for Fuels, Lubricants and associated products. Based in Sydney Australia our scope of testing primarily covers Specification checks, Identification of Fuel / lubricant grades, and identification of contaminants, sludges, residues, deposits, etc.

Products tested include Diesel, Petrol, Fuel Oil, Waste Oil, Biodiesel, Lubricating/Hydraulic fluids, Grease, Water, Soil, etc.

In addition to the above, we can also provide a wide variety of testing outside our normal scope, so if what you require is not listed, please ask as we may well be able to assist you.

All prices include 10% GST and may change without notice

Effective 1st July 2006

DIESEL FUEL TESTING

Level 2D $110.00	**TESTS**	**METHOD**
	Water	ASTM D95
	Density @15C	ASTM D1298
	Particulates	TSM070
	Bacteria	TSM005
	Yeast	TSM005
	Mould	TSM005
	Appearance	Visual

Level 3D $220.00	**TESTS**	**METHOD**
	Distillation	ASTM D86
	Flash point	ASTM D93
	Cloud point	ASTM D2500
	Water	ASTM D95
	Density @15C	ASTM D1298
	Cetane index	ASTM D4737
	Particulates	TSM070
	Bacteria	TSM005
	Yeast	TSM005
	Mould	TSM005
	Appearance	Visual

Level 4D $913.00	**TESTS**	**METHOD**
	Distillation	ASTM D86
	Flash point	ASTM D93
	Cloud point	ASTM D2500

	Water	ASTM D95
	Density @15C	ASTM D1298
	Cetane index	ASTM D4737
	Ash content	ASTM D482
	Carbon Residue (10% res)	ASTM D524
	Copper corrosion	ASTM D130
	Oxidation stability	ASTM D2274
	Sulphur	ASTM D2622
	Viscosity @40C	ASTM D445
	Sediment	ASTM D473

For other available tests see General List

PETROL TESTING

Level 2P $165.00	**TESTS**	**METHOD**
	Distillation	ASTM D86
	Density @15C	ASTM D1298
	Particulates	ASTM D5452
	Colour/Appearance	Visual
	Water	Visual

Level 3P POA	**TESTS**	**METHOD**
	Distillation	ASTM D86
	Density @15C	ASTM D1298
	Particulates	ASTM D5452
	Lead content	ASTM D3237
	Benzene content	ASTM D3606
	Octane number (RON or MON)	ASTM D2699/2700
	Existent gum	ASTM D381
	Reid vapour pressure	ASTM D323
	Copper corrosion	ASTM D130
	Sulphur	IP336

For other available tests see General List

BIODIESEL TESTING

TEST	PRICE (inc GST)	METHOD
Total Acid Number	$33.00	ASTM D664
Total contamination	$55.00	ASTM D5452
Density @15C	$33.00	ASTM D1298
Water	$33.00	ASTM D1796
Flash point	$44.00	ASTM D93
Sulphur	$88.00	ASTM D5453
Alcohol content	$88.00	prEN14110
Free & Total glycerol	$88.00	ASTM D6584
Oxidation stability	$163.35	EN14112
Ester content	$88.00	EN14103
Viscosity @40C	$33.00	ASTM D445
Copper Corrosion	$44.00	ASTM D130
Phosphorus	$88.00	ASTM D4951
Carbon Residue	$66.00	ASTM D4350
Sulphated Ash	$66.55	ASTM D874
Sodium	$5.50	EN14108
Potassium	$5.50	EN14108
Calcium	$5.50	EN14538
Magnesium	$5.50	EN14538
Distillation temp @90% rec	$99.00	ASTM D1160
Cold Filter Plugging Pt	$55.00	ASTM D4539

OIL TESTING

Level 1 OIL $33.00	**TESTS**	**METHOD**
	Water	TSM100
	Wear Metals	AAS

Level 2 OIL $44.00	**TESTS**	**METHOD**
	Water	TSM100
	Wear Metals	AAS
	Viscosity @40C or 100C	ASTM D445

Level 3 OIL $55.00	**TESTS**	**METHOD**
	Water	TSM100
	Wear Metals	AAS
	Viscosity @40C and 100C	ASTM D445
	Total Base Number - Engine	ASTM D2896
	Total Acid Number - Hydraulic	ASTM D974
	Particle count	TSM040
	Retained solids	TSM070
	Pentane Insolubles	ASTM D4055
	Fuel dilution	TSM120

GREASE TESTING

GREASE	TESTS	METHOD
$96.80	Drop point	ASTM D566
$88.00	Chlorine content	ASTM D808
$44.00	Copper Strip Corrosion	ASTM D130
$72.60	Cone Penetration	ASTM D217
$110.00	Evaporation Loss	ASTM D972
$11.00	Metal Type	AAS
$110.00	Oil Separation	ASTM D1742
$163.35	Oxidation Stability	ASTM D942
$165.00	Roll Stability	ASTM D1831
$110.00	Pumpability	Lincoln Ventmeter
$110.00	Base oil viscosity	ASTM D128/445

TURBINE OILS

PRICE	TESTS	METHOD
$145.20	Rusting	ASTM D566
$66.00	Demulsibility	ASTM D1401
$44.00	Copper Strip Corrosion	ASTM D130
$18.15	Colour	ASTM D1500
$60.50	Dielectric Strength	ASTM D1767
$121.00	Foam Tendency	ASTM D892
$30.25	Total Acid Number	ASTM D974
$33.00	Viscosity	ASTM D445

WASTE OIL

PRICE	TESTS	METHOD
$110.00	Polychlorinated Biphenyls (PCB)	USEPA 8082
$33.00	Viscosity @40C	ASTM D445
$55.00	Water	ASTM D95
$44.00	Flash point	ASTM D93
$33.00	Density	ASTM D1298
$88.00	Chlorine	ASTM D808

For other available tests and individual prices see General Price List

MINING INDUSTRY

PRICE (as a group)	WATER PROFILE (make up water)	METHOD
$176.00	Alkalinity – mg/L	APHA 2310
	TDS – mg/L	APHA 2540C
	Suspended Solids – mg/L	Suspended solids
	Oil & Grease – mg/L	APHA 5520
	Turbidity – NTU	APHA 2130
	Conductivity – us/cm	APHA 2510
	pH	APHA 4500-H
	Hardness – mg/L	APHA 2340B
	COD – mg/L	APHA 5220
	Elemental analysis (8 elements) CO3 mg/L HCO3 mg/L	APHA 3111 APHA 2310 APHA 2310

PRICE	TEST	METHOD
$220	Filter analysis	TSM140
$110	Sludge analysis (ash, elements, IR, etc)	TSM145
$275 per product	Side Flap Valve lubricity	JOY
$110	Steel finger corrosion	JOY
$110 per product	O'Ring swell	JOY
$55 per water type	Stability	JOY
$165 per product	Luxemberg corrosion	DBT
$44	Foaming tendency (seq I)	DBT
$121	Foaming tendency (seq I, II, & III)	DBT

T&S LABORATORIES

GENERAL TEST LIST

CODE	TEST	PRICE (including GST)
A0005	ACID DIGEST	$22.00
Z001	ADMIN FEE	$22.00
A0010	AIR RELEASE VALUE IP313	$133.10
A0020	ALUMINIUM CONTENT IP363	$133.10
A0030	AMMONIA CONTENT TSM121	$42.35
A0040	ANILINE POINT ASTM D611	$48.40
A0050	ASH CONTENT ASTM D482	$55.00
A0060	ASPHALTENES IP143	$133.10
A0070	BACTERIA COUNT TSM005	$33.00
A0090	BROMINE NUMBER IP129	$84.70
A0095	CARBONYL CONTENT ASTM D4423	$133.10
A0100	CCAI TSM010	$12.10
A0110	CETANE INDEX (CALC) ASTM D4737	$22.00
A0120	CETANE INDEX (DETERM) ASTM 473	$132.00
A0130	CHEMICAL OXYGEN DEMAND APHA508	$96.80
A0360	CHLORIDE/SULPHATE ASTM D878	$33.00
A0135	CHLORINATED HYDROCARBONS	$66.00
A0140	CHLORINE CONTENT ASTM D808	$88.00
A0141	CHLORINE CONTENT ASTM D808/ISE	$77.00
A0150	CLADESPORIUM DEF AUS252/2	$121.00
A0160	CLOUD POINT ASTM D2500	$55.00
A0165	COLD FILTER PLUGGING IP309	$55.00
A0170	COLOUR ASTM D1500	$18.15
A0175	COMBUSTIBILITY ISO9038	$66.00
A0180	COMPATIBILITY ASTM D2781	$18.15
A0190	CONDUCTIVITY TSM020	$16.50
A0201	CONRADSON CARBON (10% RES) AST	$121.00
A0200	CONRADSON CARBON ASTM D189	$84.70
A0210	COPPER STRIP CORROSION ASTM D1	$44.00
A0221	DEMULSIBILITY ASTM D1401	$106.48
A0220	DEMULSIFICATION NUMBER IP19	$165.00
A0230	DENSITY ASTM D1298	$33.00
A0235	DIELECTRIC STRENGTH IEC156	$60.50
A0240	DISTILLATION RANGE ASTM D86	$77.00
A0250	DOCTOR TEST IP30	$36.30
A0260	DROPPING POINT ASTM D566	$96.80
A0626	ESTER CONTENT	$88.00
A0262	ETHANOL (0.1%) TSM127	$55.00
A0261	ETHANOL CONTENT (1%) TSM126	$24.20
A0263	EVAPORATION LOSS ASTMD972/2595	$110.00
A0265	EXISTENT GUM ASTM D381	$96.80
A0266	FAME AOCS	$66.00
FLT	FILTER ANALYSIS	$198.00

A0267	FILTER BLOCK.TEND. ASTM D2068	$55.00
A0270	FIRE POINT ASTM D92	$44.00
A0280	FLASH POINT (ABEL) IP170	$44.00
A0300	FLASH POINT (COC) ASTM D92	$44.00
A0290	FLASH POINT (PMCC) ASTM D93	$44.00
A0305	FLUORINE ASTM D808/ISE	$77.00
A0310	FOAMING (FULL) ASTM D892	$139.15
A0320	FOAMING (SINGLE SEQ) ASTM D892	$55.00
A0330	FUEL DILUTION ASTM D322	$66.00
GCMISC	GC ANALYSIS	$66.00
A0335	GLYCERIDES	$88.00
A0337	Grease base oil viscosity	$95.00
A0350	GREASE METAL TYPE TSM122	$12.10
A0370	IODINE NUMBER AOCS CD 1-25	$96.80
IRMISC	IR ANALYSIS	$55.00
A0375	LEAD IN PETROL ASTM D3237	$66.00
1COOL	LEVEL 1 COOLANT	$33.00
1D	LEVEL 1 DIESEL	$60.50
1O	LEVEL 1 OIL	$33.00
1P	LEVEL 1 PETROL	$48.40
2D	LEVEL 2 DIESEL	$80.52
2O	LEVEL 2 OIL	$44.00
2P	LEVEL 2 PETROL	$132.00
3D	LEVEL 3 DIESEL	$176.00
3O	LEVEL 3 OIL	$55.00
3P	LEVEL 3 PETROL	$514.25
A0740	METALS (each) TSM125	$5.50
A0376	MOISTURE (CAH2) TSM090	$33.00
A0377	MOISTURE (D&S) ASTM D95	$55.00
A0378	MOISTURE (KF) ASTM D1744	$30.25
A0379	MOISTURE ON SOLIDS (KF)	$55.00
A0400	NITROGEN CONTENT ASTM D3228	$88.00
A0405	OCTANE NUMBER (MON) ASTM D2700	$220.00
A0406	OCTANE NUMBER (RON) ASTM D2699	$220.00
A0410	OIL CONTENT (EVP) TSM123	$33.00
A0420	OIL CONTENT (EXT) APHA5520B	$55.00
A0425	OIL SEPARATION ASTM D1742	$110.00
A0430	OXIDATION STABILITY ASTM D2274	$163.35
A0440	PARTICLE COUNT TSM040	$36.30
A0445	PARTICULATES ASTM D5452	$55.00
A0495	PCBs USEPA 8082	$110.00
A0460	PENETRATION (WORKD) ASTM D217	$96.80
A0450	PENETRATION ASTM D217	$72.60
A0470	PENTANE INSOLUBLES ASTM D4055	$30.25
A0480	PEROXIDE NUMBER ASTM D3703	$193.60
A0490	pH VALUE TSM050	$24.20
A0510	POUR POINT ASTM D97	$55.00
A0513	PUMPABILITY (Lincoln)	$110.00

A0516	RAMSBOTTOM (10% RES) ASTMD524	$132.00
A0515	RAMSBOTTOM CARBON ASTM D524	$66.00
A0525	REFLUX BOILING PT ASTM D1120	$42.35
A0520	REFRACTIVE INDEX TSM060	$24.20
A0527	RESISTIVITY	$38.50
A0530	RETAINED SOLIDS TSM070	$33.00
A0535	RUSTING	$145.20
SMPREP	SAMPLE PREPARATION	$22.00
A0540	SAPONIFICATION NUMBER ASTM D94	$55.00
A0570	SEDIMENT & WATER ASTM D4007	$48.40
A0550	SEDIMENT ASTM D473	$96.80
A0580	SLUDGE (EXISTENT)	$88.00
A0590	SLUDGE (POTENTIAL)	$88.00
A0600	SMOKE POINT ASTM D1322	$66.00
A0610	SPECIFIC ENERGY ASTM D240	$88.00
A0630	SPECIFIC GRAV (PIC) ASTM D1217	$30.25
A0620	SPECIFIC GRAVITY ASTM D1298	$20.57
STAB	STABILITY (JOY)	$55.00
A0640	SULPHATED ASH ASTM D974	$66.55
A0651	SULPHUR AS1030.6	$72.60
A0650	SULPHUR ASTM D129	$66.00
TCLP	TCLP	$66.00
A0380	TOTAL ACID NUMBER ASTM D664	$44.00
A0390	TOTAL ACID NUMBER ASTM D974	$33.00
A0660	TOTAL BASE NUMBER ASTM 2896	$44.00
A0664	TOTAL DISS SOLIDS APHA 2540C	$33.00
A0665	TOTAL PETROLEUM HYDROCARBONS	$66.00
A0666	TURBIDITY APHA 2130	$11.00
A0670	UNSAPONIFIABLE MATTER ASTMD128	$121.00
A0680	VACUUM DISTILLATION	$99.00
A0690	VAPOUR PRESSURE ASTM D323	$78.65
A0700	VISCOSITY (BROOK) TSM124	$36.30
A0710	VISCOSITY (KIN) ASTM D445	$33.00
A0720	VOLATILES TSM110	$24.20
A0730	WATER & SEDIMENT ASTM D1796	$33.00

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