



DESCRIPTION:

Liquid Intelligents 115 Total Fill Race Coolant is a 100% solution of glycols blended with a Hybrid Organic Carboxylate Inhibitor. When used as a Total Fill, with a 3 to 5 psi pressure cap on a closed cooling system (radiator) increases the Boiling Point to 190°C.

Characteristics:

Liquid Intelligents 115 Total Fill Race Coolant Can Provide:-

- ❑ Safety margin with modified vehicles, racing or over loaded machines.
- ❑ Enhanced anti-boil margins.
- ❑ Antifreeze.
- ❑ Anti Corrosion Properties.
- ❑ Extended Service Intervals.
- ❑ Lower cooling system pressure.

Liquid Intelligents 115 can run at a maximum temperature of 190°C in the radiator using a 3 to 5 psi pressure cap. Liquid Intelligents 115, is superior to conventional coolants and has a boiling/vaporization point considerably higher than conventional water/glycol based coolants. The end result is greater thermal efficiency, which gives major benefits in race or extreme overload hot weather conditions.

Safety Margin with modified vehicles, racing or overloaded machinery.

A 96% coolant when mixed with water @ 50% solution using a 15 psi pressure cap boils at 130°C, the oxygen that is generated by the boiling puts air into the cooling system. As this air expands and tries to escape through the radiator cap it hydraulics the water and coolant from the radiator. Now there is nothing to stop the engine internals from reaching critical temperatures, seizing or melting the pistons if not overheating the rings and loosing ring/bore tension even if stopped in time. This situation would be total engine failure if not the beginning of compression and oil escaping past the damaged rings, maybe blowing a head gasket and warping a head.

Liquid Intelligence 115 Total Fill Race Coolant can handle temperatures of up to 190°C before boiling, this would mean the above engine damage can not happen unless 190°C is exceeded.

This gives a far greater safety margin with modified vehicles, racing or overloaded machinery especially in elevated ambient temperatures.

In race applications this could mean finishing the race while.....

(a) Slipstreaming only cm's behind the car in front, in 50°C ambient track air conditions.

(b) A plastic bag is stuck in the front of the radiator restricting air flow.

Normally the above would mean loss of coolant and subsequent overheating of your engine, loosing the race and often permanent engine damage.

SERVICE BULLETIN

Air cooled engines see temperatures of up to 250°C in low air flow hot ambient conditions, they survive because their temperatures don't go much above this and their lubrication is a total loss system.

Inconsistent temperatures as high as 190°C is not hot enough to damage a liquid cooled engine. It would take hours at 190°C to degradate the oil enough to sustain engine damage. Although we all know it is not desirable to run your engine at temperatures of 130°C to 190°C, the point is, if for some reason you did exceed 130°C and go up to 190°C intermittently we are pointing out that this temperature is not high enough to change the structure of the metal in the engine and damage the engines metal components.

The problem occurs in a liquid cooled engine when it elevates over 130°C and hydraulics out its standard coolant and the bore temperature goes up way over 250°C. With no fluid in the water jacket the block insulates the bores from the cooler out side temperatures, guaranteeing permanent engine damage and failure as there is nothing to stop 500°C to 700°C from being achieved. This of course would cause permanent engine melt down.

Running your engine up to 190°C could be a concern if using oils like SAE 0w30, these low viscosity oils are usually around 10 to 12 cst. @ 100°C, and @ 190°C they are likely to drop to 4 to 6 cst. This is not desirable protection for a powerful engine. If you were running SAE 10w60, this would be 21 to 24 cst @ 100°C and would drop to 10 to 12 cst @ 190°C offering far greater protection.

Liquid Intelligent 115 Total Fill Race Coolant gives protection up to 190°C from boiling and subsequent fluid loss, this is more than enough to finish the trip, job or race.

Antiboil

Liquid Intelligent 115 Total Fill Race Coolant when used with a 3 to 5 psi pressure cap on a closed cooling system (radiator) increases the to Boiling Point 190°C.

Antifreeze

Liquid Intelligent 115 Total Fill Race Coolant gives a freezing point of -56°C. When Liquid Intelligents 115 is cooled to below -16°C it become slightly more viscous.

Corrosion Inhibiting Properties

No matter how many different types of metal are present in your cooling system, the anti-corrosion package used in Liquid Intelligents 115 prevents corrosion damage to these expensive internal engine components. In the ASTM D1384 glassware test, incorporated in the Australian AS 2108.2004 performance standards, Cast Aluminium may loose up to -15mg of weight through corrosion and still pass. Liquid Intelligents 115 when subjected to the same test had less than 1mg loss, displaying Liquid Intelligents 115's anti-corrosion carboxylate layer completely coats and protects the internals of a cooling system with a corrosion inhibiting layer.

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Extended Service Interval

Liquid Intelligents 115 long life coolant protects cooling systems for a minimum of 6 Years or 500,000 km's. This protection extends to petrol, diesel and gas combustion engines in all their cooling systems.

Lower cooling system pressure

Being able to run 3 to 5 psi in the cooling system removes the pressure from venerable components like; radiator hoses, water pump carbon seals, heater radiator cores and main radiator cores from being fatigued from hours of pressure fluctuations up to 20 psi. Operating at far less pressures literally removes the likelihood of premature failure of on these components making the entire system more reliable. Many of today's radiator top and bottom or side to side tanks are plastic crimped onto the aluminium radiator core, this is an extremely venerable area in extreme heat conditions.

How it Works

Liquid Intelligents 115 Total Fill Coolant can run up to a maximum temperature of 190°C in the radiator using a 3 to 5 psi pressure cap. Liquid Intelligents 115 is superior to conventional coolants and has a boiling/vaporization point considerably higher than conventional water/glycol based coolants. The end result is greater thermal efficiency, which gives major benefits in race or extreme overload hot weather conditions.

Within all healthy cooling systems Nucleate Boiling is a normal occurrence. Nucleate boiling takes place when coolant is in direct contact with the hot metal of the engine block or cylinder heads, when they have reached or exceeded the boiling point of the coolant.

As the thin film of coolant turns to Nucleate Boiling (or small vapour bubbles) on the hot metal surfaces of the cooling system, the layer of vapour bubbles breakaway from the surface and is replaced by more liquid coolant and the process repeats. Large amounts of heat are absorbed from the hot metal surfaces by the controlled nucleate boiling process, thus maintaining the engine's temperature.

When the coolant is operating continually above boiling point the nucleate boiling process is reduced or stopped, the coolant itself becomes continuously displaced from the metal surface by a layer of vapour called a "vapour blanket". When vapour blanketing occurs, the metal surface becomes insulated from the surrounding liquid coolant, thus elevating the engine temperature significantly. The loss of Nucleate Boiling is a common problem with conventional coolants when the engine is under high load or has elevated temperatures.

Healthy Nucleate Boiling promotes uninterrupted heat transfer. The low surface tension of Liquid Intelligence 115 Total Fill Race Coolant aids in the breaking away of vapour and the movement of coolant across the engine hotspots, controlling surface vapour and surface coolant replenishment. The result is lower engine metal temperatures.

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Liquid Intelligence 115 Total Fill Race Coolant is a Long Life Hybrid Organic Inhibitor blended with 100% solution of glycols. The Liquid Intelligence 115 Coolant can maintain a vapour free liquid to metal contact at all coolant temperatures and engine loads. The small amount of vapour blanketing generated during nucleate boiling is easily swept off the metal surface and then completely diluted within the coolant jackets of the cylinder heads and engine body.

This highly developed coolant gives corrosionless cooling by the total elimination of water coupled with the unique, long life hybrid organic inhibitor formula. Liquid Intelligents 115 meets and exceeds the following OEM specifications:

Specifications

Liquid Intelligents 115 meets and exceeds the following OEM specifications.

General Motors GM 1825M	Australian Standard AS 2108.2004
General Motors GM 6277M	Ford SED-M97B49-A
Japanese JIS K2234 LLC	Ford SED-M97B49-A
Japanese SAE J I034	Ford WSS-M97B44-C
Japanese JASO M325 LLC	BS 6580 (British Standard)
UNE 26-361-88/1	FVV Heft R443 (Germany)
NATO S-757	E/L-1415b (MIL Italy)
Hyundai	
Mazda MES 121C	
Subaru	
Toyota TS K2601 G	
Renault	
Volvo (Reg No 260) Spec.No. 1286083	
BMW N600 69.0	
Cummins 90 T8-4	
Mitsubishi ES-X64216	
Honda	

Application Instructions: Jacking vehicle up as high as possible from the rear, remove bottom radiator hose from both the water pump and radiator allowing engine block and radiator to drain as much as possible. Drop vehicle back down to complete draining radiator. Any block or radiator drain bungs should be removed. (if fitted) Drain any hoses and blow through heater (on hot) to remove water from heater, if using compressed air be careful not to over pressure system.

Warning: The addition of water to Liquid Intelligents 115 Total Fill Race Coolant will reduce the boiling point.

LIQUID INTELLIGENTS PTY LIMITED
SYDNEY AUSTRALIA
TELEPHONE 61 2 9700 0880
FAX 61 2 9700 0881
DISTRIBUTED BY:

