



# PRORADFLU CONCENTRATE

14/08/2013

## PRODUCT CATEGORY: ANTIFREEZE/COOLANT

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The **PRORADFLU CONCENTRATE** is concentrated antifreeze liquid with high corrosion-protection properties. The product is designed for the preparation of dilute solutions in cooling systems. It is based on mono-ethylene glycol with inorganic matrix additives.

The formulation is nitrites, amines and phosphates free (NAP-free).

The product creates a thin protection layer in the cooling system, but it is extremely resistant. Thanks to the triple protection against rust/corrosion, overheating and frost, it ensures the proper functioning of the cooling system for long time. In particular, the special antirust/anticorrosion characteristics:

- **Prevent damages to metals (aluminum, copper, and alloys)**
- **Prevent scale to any ferrous metal**
- **Protects plastic and rubber components: pipes of the cooling system, expansion vessels and radiator compartment**

The elevated alkalinity reduces any tendency to corrosion, even after long periods of severe service conditions. Other most relevant characteristics are:

- **Low freezing point**
- **High boiling point**

Antifoam skills allow a good heat exchange even at high circulation velocities. The **PRORADFLU CONCENTRATE** is particularly suitable for those applications where cavitation is likely to be a problem, for instance in high-power engines, in cooling systems with high circulation velocities and in diesels where vibration can cause problems.

## INTERNATIONAL SPECS COMPLIANCE:

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**AFNOR** R 15/601 (F)\*    Except for pH.

**BS** 6580 (GB)

**E/L** 1415C (mil ITALY)

**FVV** HEFT R 443 (D)

**KSM** 2142 (K)

**SAE** J1034

**ASTM** D3306 & D4985

**CUNA** NC 956-16 (I)

**EMPA** (CH)

**JIS** K 2234 (J)

**NATO** S 759

**UNE** 26361-88 (E)

## O.E.M. SPECS COMPLIANCE:

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**BMW** N 600 69.0

**FORD** ESD M97 B49-A

**GM** US 6277 M

**MB** DBL 7700

**PORSCHE/VW/AUDI/SEAT/SKODA** TL 774 C

**CHRYSLER** MS 9176

**FORD** WSS-M97B44-C

**MAN** 324

**OPEL** GM QL 130100

**VOLVO**



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## CHARACTERISTICS (TYPICAL FIGURES):

<i>PROPERTIES</i>	<i>U.M.</i>	<i>VALUE</i>	<i>ASTM D-3306 Limit</i>
Density (at 15 °C)	[kg/dm <sup>3</sup> ]	<b>1.125</b>	1.110 ÷ 1.145
Color		<b>green/blue</b>	
Water	[%]	<b>2.5</b>	3 max
Alkaline reserve (HCl 0.1N)	[ml]	<b>16</b>	
pH (aqueous solution 50%)		<b>9.0</b>	7.5 ÷ 11.0
Hard water resistance		<b>pass</b>	

## ANTI-CORROSION PROPERTIES EVALUATION:

ASTM D-1384 – Corrosion test for engine coolants in glassware.

<i>METAL</i>	<i>WEIGHT LOSS [mg/specimen]</i>	<i>ASTM D-1384 Limit</i>
Copper	<b>0.8</b>	10 max
Solder	<b>2.2</b>	30 max
Brass	<b>0.8</b>	10 max
Steel	<b>0.1</b>	10 max
Iron	<b>0.2</b>	10 max
Aluminum	<b>0.6</b>	30 max

ASTM D-4340 – Corrosion of cast aluminum alloys in engine coolants under heat rejecting conditions.

<i>Metal</i>	<i>WEIGHT LOSS [mg/cm<sup>2</sup>/7 gg]</i>	<i>ASTM D-4340 Limit</i>
Aluminum	<b>0.6</b>	1 max



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ASTM D-2570 – Simulated service corrosion testing of engine coolants.

<i>METAL</i>	<i>WEIGHT LOSS [mg/specimen]</i>	<i>ASTM D-2570 Limit</i>
Copper	<b>1.1</b>	20 max
Solder	<b>4.2</b>	60 max
Brass	<b>1.0</b>	20 max
Steel	<b>0.3</b>	20 max
Iron	<b>1.6</b>	20 max
Aluminum	<b>2.2</b>	60 max

ASTM D-2809 – Cavitation corrosion and erosion characteristics of aluminum pimps with engine coolants.

<i>METAL</i>	<i>VISUAL RATING</i>	<i>ASTM D-2809 Limit</i>
Aluminum	<b>9</b>	8 min

## TYPICAL TABLE FOR DILUTION IN WATER:

<i>FREEZING POINT [°C]</i>	<i>BOILING POINT [°C]</i>	<i>PRORADFLU Pure [weight]</i>	<i>PRORADFLU Pure [volume]</i>
<b>-10</b>	105	22 %	20 %
<b>-15</b>	105	29 %	27 %
<b>-20</b>	106	33 %	30 %
<b>-25</b>	106	40 %	37 %
<b>-37</b>	108	50 %	47 %
<b>-40</b>	109	54 %	51 %
<b>-48</b>	109	58 %	56 %

All the above data are not specific and are subject to normal manufacturing tolerances.