

## Waterless Coolant

### **Description and applications:**

Water-free antifreeze-coolant for direct use. Its composition based on glycols in synergistic combination allows working at high temperatures without formation of steam and without cavitation.

Superior stability against temperature and pressure, much longer useful lives compared to a conventional product.

The product is presented ready to use. **Do not dilute with water** or mix with other fluids because the antifreeze and anticorrosion properties would not be guaranteed.

It protects the metal elements usually present in thermal circuits.

It does not contain Nitrite or Amine as these are products that may react to give nitrosamines which are potential carcinogen agents. It does not contain phosphates either as their environmental implications have been questioned.

It does not contain silicate, it is stable for long periods of time in stopping and storage situations.

### **Range of use:**

The product is stable in the temperature range from -40°C to 220°C.

### **Advantages:**

- Very high boiling temperature, without cavitation or steam formation.
- Allows working at higher temperatures than conventional antifreeze.
- Avoids deposits of biological origin or caused by corrosion in the thermal circuit.
- Biodegradable.
- Non toxic.



**Compatible Materials:**

*Waterless Coolant* is compatible with the usual materials of cooling circuits. The next table shows plastics, sealants and elastomers compatible with the product. Data has been gathered in specific bibliography and proprietary tests.

<b>Compatibility with Elastomers</b>			
<b>Material</b>	<b>25°C</b>	<b>80°C</b>	<b>160°C</b>
<b>Adiprene™ L-100</b>	OK	NR	NR
<b>Black Rubber 3773</b>	OK	NR	NR
<b>Buna N (o 25)</b>	OK	OK	--
<b>Buna S</b>	OK	Acceptable	NR
<b>ButylRubber</b>	OK	OK	--
<b>Compressed Asbestos</b>	OK	OK	Acceptable
<b>EPDM</b>	OK	OK	OK
<b>EPR Rubber</b>	OK	OK	OK
<b>Hycar™ D-24</b>	OK	Acceptable	--
<b>Hypalon™</b>	OK	NR	NR
<b>Kalrez™</b>	OK	OK	OK
<b>Natural RubberGum</b>	OK	NR	NR
<b>Neoprene 7797</b>	OK	Acceptable	--
<b>Red Rubber 107</b>	OK	NR	NR
<b>Saraloy™ 300</b>	OK	NR	NR
<b>Silicone Nº 65</b>	OK	OK	--
<b>Thiokol™ 3060</b>	OK	NR	NR
<b>Viton™ A</b>	OK	OK	NR
<i>OK: Recommended</i>	<i>NR: Not Recommended</i>		<i>--: No data</i>

Phenolic resins, plasticized PVC and polyurethane elastomers are not compatible with *Waterless Coolant*

Zinc is not compatible with glycols so it should be avoided since it could get dissolved.

### **Filling the installation:**

Before filling the systems should be flushed with water to remove traces of flux.

Completely drain the circuit<sup>1</sup> and fill immediately with *Waterless Coolant*. Long-term no-load operation of the system should be avoided because this can adversely affect the stability of the heat transfer medium and considerably reduce its service life.

*Waterless Coolant* is ready to use, fill the primary circuit of the installation with the antifreeze fluid.

Mixtures with other kind of antifreeze should be avoided for possible incompatibilities which would reduce the useful life of the product.

This product is totally stable and remains without alterations for long periods of time.

In case of transfer to other containers make sure they do not contain zinc because it is not compatible with the product. Store in air-tight containers.

### **Precautions:**

It is a non flammable, non corrosive product, so no special precautions are required.

Avoid contact with eyes, in case of splashing flush with running water.

Do not eat or drink, keep away from children.

Store in a clean and well-ventilated place.

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<sup>1</sup> Small amounts of water in the circuit do not significantly affect the product performance. Amounts of 1-3% of water on the total of the circuit are admissible.

Temperature °C	Density (Kg./m <sup>3</sup> )	Cp (KJ/Kg.°C)	Heat Conductivity W/m.K	Dinamic Viscosity (mPa.s)	Kinematic Viscosity (mm <sup>2</sup> /s)	Vapour Pressure (mbar)
-25	1145,6	1,945	0,253	6.869,2	5.996,1	0
-20	1140,8	1,975	0,250	2.097,0	1.838,2	0
-15	1136,1	2,005	0,248	899,1	791,4	0
-10	1131,4	2,035	0,245	465,2	411,1	0
-5	1126,8	2,064	0,242	271,2	240,7	0
0	1122,2	2,094	0,240	171,7	153,0	0
5	1.117,8	2,124	0,237	115,6	103,4	0
10	1.113,4	2,154	0,234	81,5	73,2	0
15	1.109,1	2,184	0,232	59,6	53,7	0
20	1.104,8	2,213	0,229	44,9	40,6	0
25	1.100,6	2,243	0,226	34,6	31,5	0
30	1.096,5	2,273	0,224	27,3	24,9	0
35	1.092,5	2,303	0,221	21,9	20,0	0
40	1.088,5	2,332	0,219	17,8	16,4	0
45	1.084,6	2,362	0,216	14,7	13,6	0
50	1.080,8	2,392	0,213	12,3	11,4	0
55	1.077,0	2,422	0,211	10,4	9,6	0
60	1.073,3	2,451	0,208	8,8	8,2	1
65	1.069,7	2,481	0,205	7,6	7,1	1
70	1.066,1	2,511	0,203	6,5	6,1	1
75	1.062,6	2,541	0,200	5,7	5,4	2
80	1.059,2	2,571	0,197	5,0	4,7	2
85	1.055,9	2,600	0,195	4,4	4,2	3
90	1.052,6	2,630	0,192	3,9	3,7	4
95	1.049,4	2,660	0,190	3,5	3,3	6
100	1.046,3	2,690	0,187	3,1	3,0	7
105	1.043,2	2,719	0,184	2,8	2,7	9
110	1.040,2	2,749	0,182	2,5	2,4	12
115	1.037,3	2,779	0,179	2,3	2,2	15
120	1.034,4	2,809	0,176	2,1	2,0	19
125	1.031,7	2,838	0,174	1,9	1,8	24
130	1.028,9	2,868	0,171	1,7	1,7	30
135	1.026,3	2,898	0,168	1,6	1,5	37
140	1.023,7	2,928	0,166	1,4	1,4	46
145	1.021,2	2,958	0,163	1,3	1,3	56
150	1.018,8	2,987	0,161	1,2	1,2	68

Data has been gathered in specific bibliography and proprietary tests. It is not part, necessarily, of the technical specifications.