

# LUZAR ORGANIC CONCENTRATE

## TECHNICAL DOCUMENTATION

Coolant – Antifreeze base on Monoethylene Glycol with 100% organic antirust additives: It maintains cooling circuits in perfect condition for longer periods of time than conventional products.

- 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 Borates or Benzoates.
- Without Silicates, avoid gelling problems after a period of time shutdown.
- It does not contain Phosphates either as their environmental implications have been questioned.

Its fluorescent yellow colour helps to detect leaks.

It protects from corrosion: aluminium, copper, brass, steel and cast iron.

### Properties:

<b>Appearance</b>	Transparent Liquid
<b>Color</b>	Fluorescent Yellow
<b>Boiling Point</b>	Aprox. 170°C
<b>pH (20°C)</b>	8,0-10,0
<b>Flash point</b>	>100°C
<b>Density (20°C)</b>	1,12-1,14 g/cc
<b>Viscosity (20°C)</b>	27 mPas
<b>Specific Heat Capacity (20°C)</b>	2,30 KJ/KgK
<b>Cubical Expansion Coefficient</b>	0,00054 1/K
<b>Alkaline Reserve</b>	min. 5 ml HCl 0,1N

### Specifications:

ASTM D-4985-94  
ASTM D-3306-94  
INTA 157413

UNE 26-361-88  
ASTM D-1177-65

### **Corrosion Protection:**

Mixtures of Monoethylene Glycol and water are more corrosive than pure water so additives should be used in order to ensure the integrity of the circuit.

The following table shows the effectiveness of a dilution of 33% of Luzar Organic concentrate with corrosive water in inhibiting corrosion according to ASTM D 1384. For a comparative purpose results for water and Monoethylene Glycol without additives are presented.

<b>Corrosion Comparative for different Metals and Coolants (mg/coupon)</b>				
<b>Metal</b>	<b>Water</b>	<b>Ethylene glycol-water 33% V/V</b>	<i>Luzar Organic Conc. 33% V/V</i>	<b>ASTM D 3306 limit</b>
<b>Copper</b>	2	4	<b>0,0</b>	<b>10</b>
<b>Soft Solder</b>	99	1.780	<b>0,4</b>	<b>30</b>
<b>Brass</b>	5	11	<b>0,7</b>	<b>10</b>
<b>Mild Steel</b>	212	974	<b>-1,3</b>	<b>30</b>
<b>Cast Iron</b>	450	1.190	<b>-3,6</b>	<b>10</b>
<b>Aluminum</b>	110	165	<b>8,9</b>	<b>30</b>

The results above are an average change in weight of coupons. A negative number indicates an increase in weight due to the formation of a stable protective layer on the metal surface. Last column presents the maximum admitted values according to the ASTM-D 3306 normative.

#### ***Test description:***

##### **ASTM D 1384:**

*In this test method, specimens of metals typical of those present in engine cooling systems are totally immersed in aerated engine coolant solutions with corrosive water for 336 h at 88°C (190°F). The corrosion inhibitive properties of the test solution are evaluated on the basis of the weight changes incurred by the specimens. Each test is run in triplicate, and the average weight change is determined for each metal.*

**Compatibility table:**

*Luzar Organic Concentrate* and its dilutions with water are compatible with the usual materials of thermal circuits. The next table shows plastics, sealants and elastomers compatible with the product. Data has been gathered in specific bibliography and proprietary tests.

Name	Abbreviation
Butyl rubber	IIR
Chloropropene	CR
Ethylene-propylene-diene rubber	EPDM
Fluorocarbon elastomers	FPM
Natural rubber up to 80°C	NR
Nitrile Rubber	NBR
Polyacetal	POM
Polyamide up to 115°C	PA
Polybutene	PB
Polyethylene high/low density	PE-LD/PE-HD
Polyethylene cross linked	VPE
Polypropylene	PP
Poly (tetrafluoroethylene)	PTFE
Polyvinyl chloride, rigid	PVC h
Silicone Rubber	Si
Styrene-butadiene rubber up to 100°C	SBR
Unsaturated polyester resins	UP

Phenolic resins, plasticized PVC and polyurethane elastomers are not compatible with water mixtures of *Luzar Organic Concentrate*.

Zinc is not compatible with Monoethylene Glycol or their mixtures with water, avoid zinc or galvanized reservoirs.

## **Applications**

*Luzar Organic Concentrate* is a concentrated product which must be diluted before use. The minimum concentration to ensure protection from corrosion is 20% (1:5). The recommended maximum is 50% (5:10). This product performs best within the range of 30 and 50% (3:10 and 5:10).

Dilution with distilled or deionised water is recommended where mains water has high hardness or where water is not potable quality or it has more than 100 ppm of chloride content. We advise consideration of legal constraints concerning the water quality used for dilution of antifreeze in whichever jurisdiction your business operates.

### **Filling the Installation:**

After pressure testing, which also affords an opportunity to determine the volume of the system from the amount of water used (water meter), the system should be drained and then filled immediately with the antifreeze. Air pockets are to eliminate immediately.

Before filling the systems should be flushed with water to remove traces of flux, especially when chlorine containing flux has been used.

After draining the circuit of old antifreeze, it should be flushed with water in order to clean possible deposits and particles before filling with *Luzar Organic Concentrated*. The product's useful life will be reduced if the system is already corroded. If corrosion is detected, corrective action should be taken before filling up the circuit.

*Luzar Organic Concentrate* has to be diluted with at least 20% V/V to assure complete metals system corrosion protection. Dilutions up to 60% can be achieved in special applications.

Mixtures with other kind of antifreeze should be avoided for possible incompatibilities which would reduce the useful life of the product. For specific compatibilities you can contact our technical department: please email [carpemar@carpemar.com](mailto:carpemar@carpemar.com).

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.

Both *Luzar Organic Concentrate* and its dilutions with water are stable for at least two years in regular stocks conditions in airtight containers.

Equipment must not be fitted with galvanized heat exchangers, heat reservoirs, tanks or pipes, because monoethylene glycol can corrode zinc.



To prepare the correct dilution, simply determine the desired freezing temperature to establish the according proportions of antifreeze and water to mix. Choose a vessel of sufficient capacity and stir until a homogenous has been achieved.

The minor surface tension of *Luzar Organic Concentrate* compared with water may make minor damage due to corrosion more apparent.

### **Heat Resistance:**

Sustained temperatures higher than 150°C cause premature ageing of Monoethylene Glycol.

Temperatures above 170°C lead to slow alteration of the chemical properties of antifreeze fluid, with the result that the reliability of operation of the system may be endangered.

In the case of not-closed systems or the insert of oxygen (e.g. via valves) the maximum usage temperature is lower.

### **Precautions:**

*Luzar Organic Concentrate* a non flammable, non corrosive product. As based in Monoethylene Glycol, the product is toxic if swallowed: Do not eat or drink and keep away of children.

Good industrial practices working with chemical products are recommendable in every case. Wash hands and forearms before eating, drinking or smoking after using the product.

Avoid contact with eyes, in case of splashing flush with running water for at least 10 minutes.

Store in a clean and well-ventilated place. Tightly sealed containers are recommended in order to maintain the properties of the product.

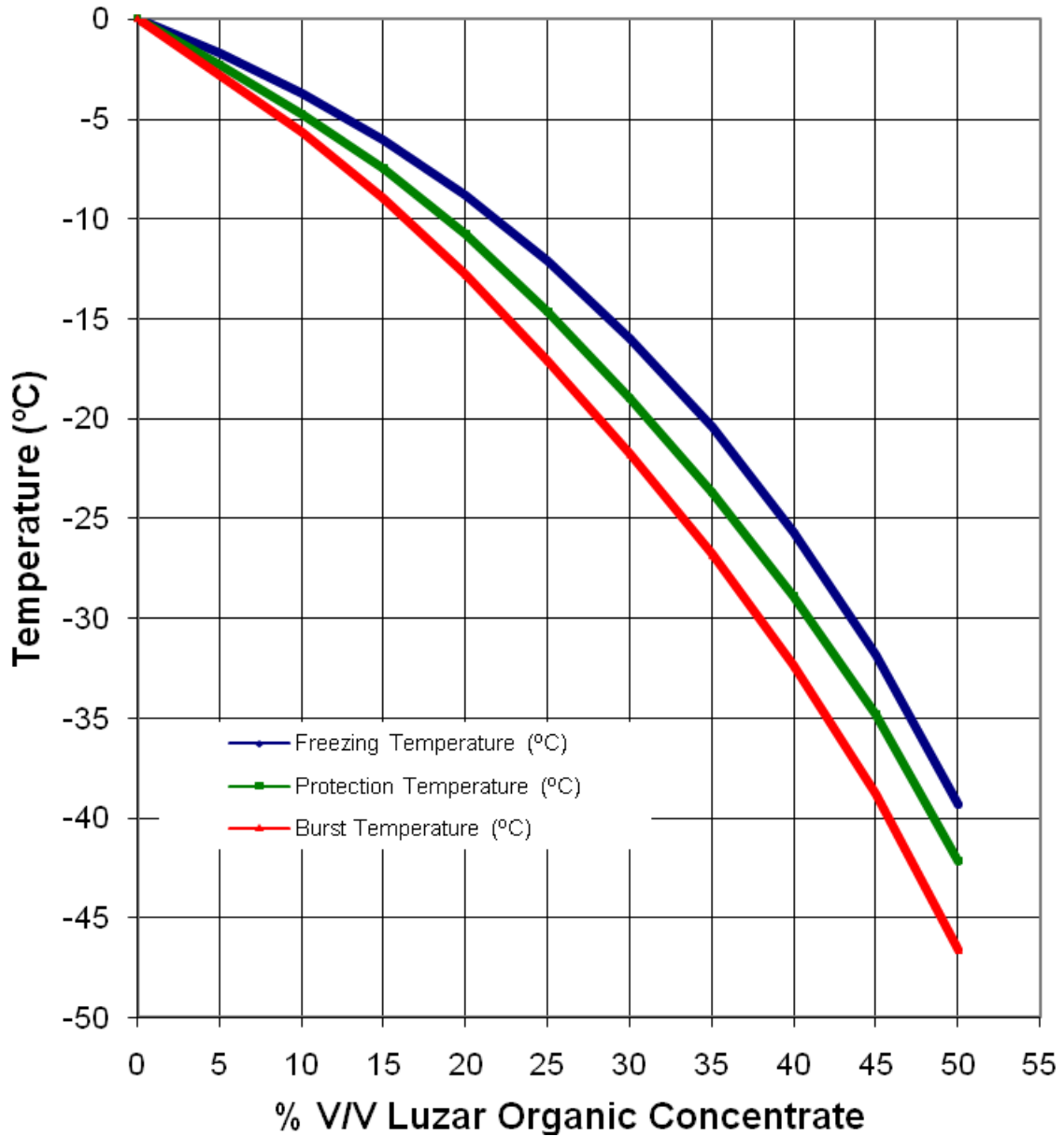
### **Presentation:**

The product is supplied in 1.000 liter IBC containers, 210 liter non-returnable plastic drums, and in 25 and 10 liter non-returnable plastics canisters.

Other volumes are available upon request.



## Temperature vs % V/V



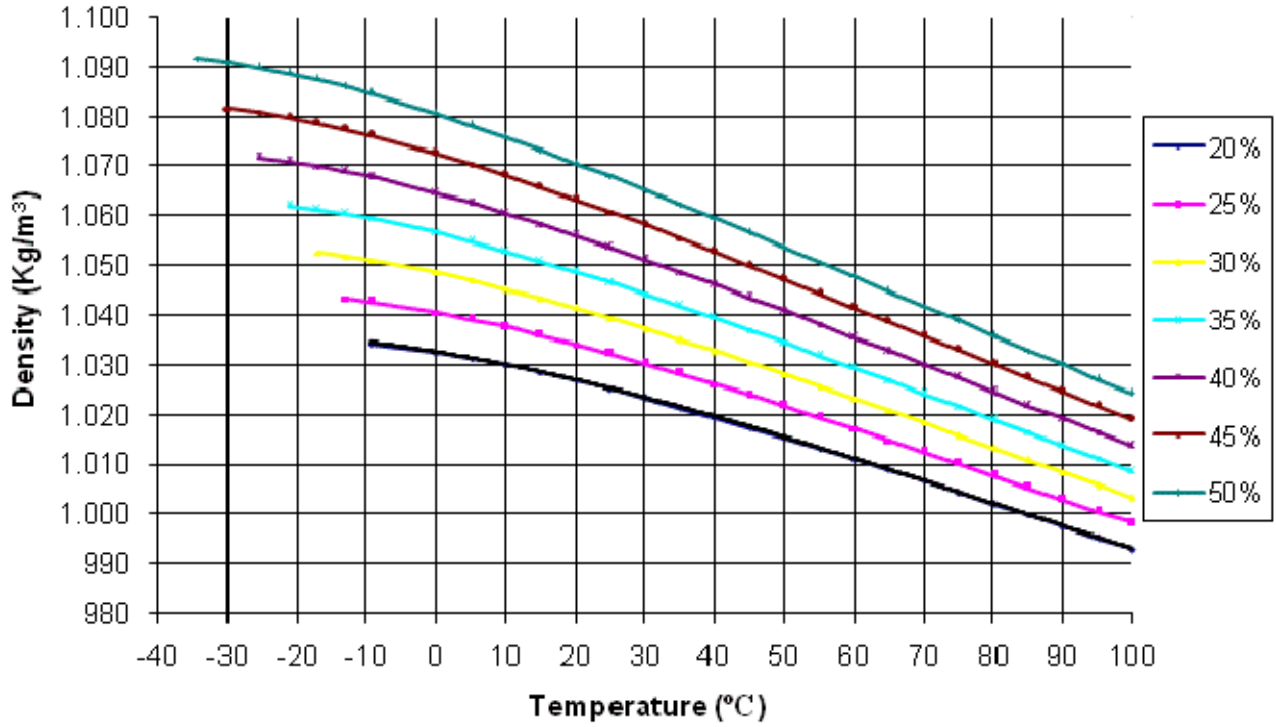
Freezing point according to ASTM D 1177 is the temperature for the first ice crystal formation.

DIN 51583 normative establishes the temperature from the product does not flow and there is danger for the circuit integrity.

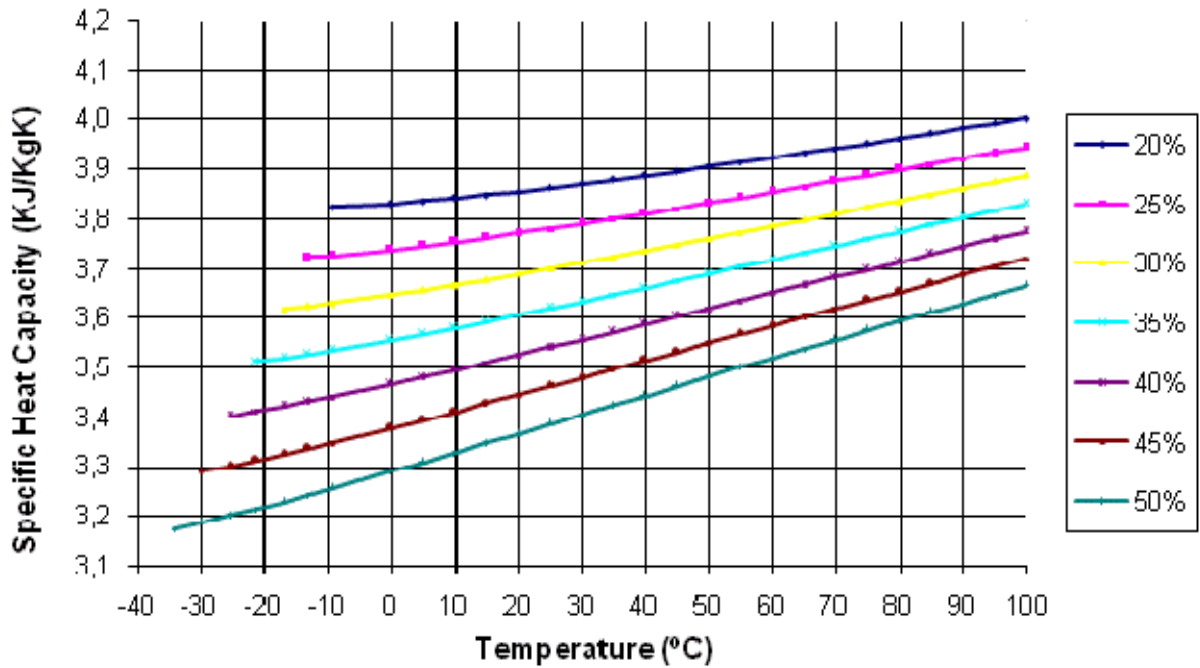
Between both temperatures exists a mixture of ice crystals and not-frozen fluid that flow without volume increase, thus, without bursting problems.



### Density .vs. % y Tª

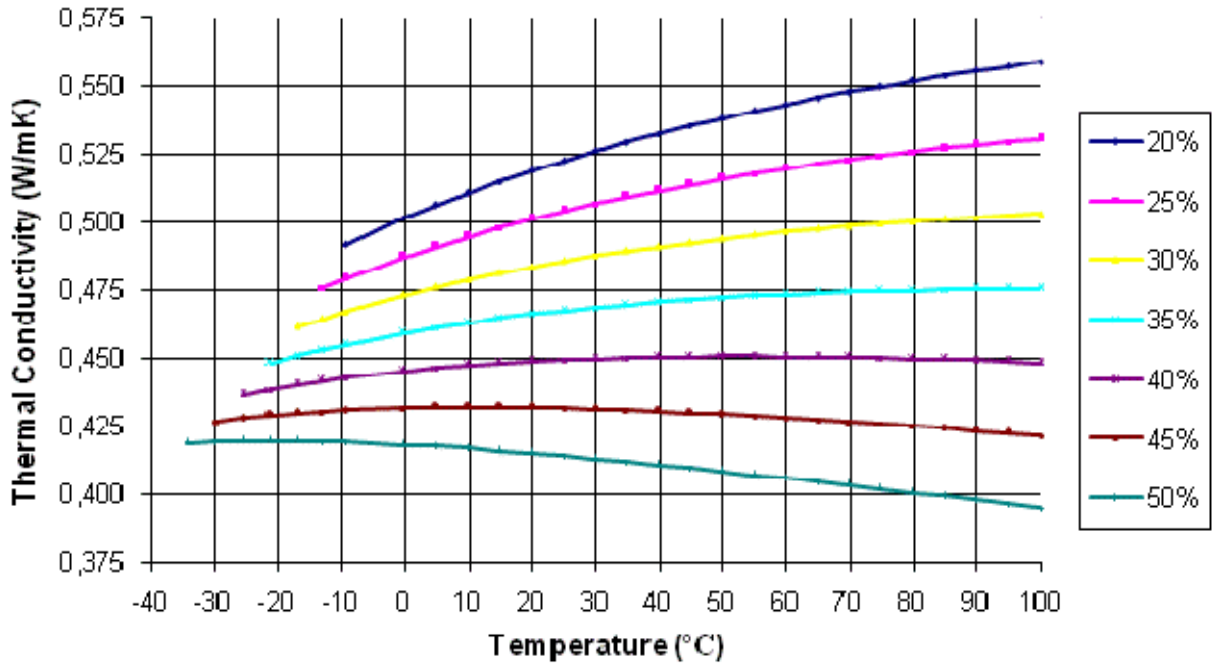


### Specific Heat Capacity .vs. % y Tª

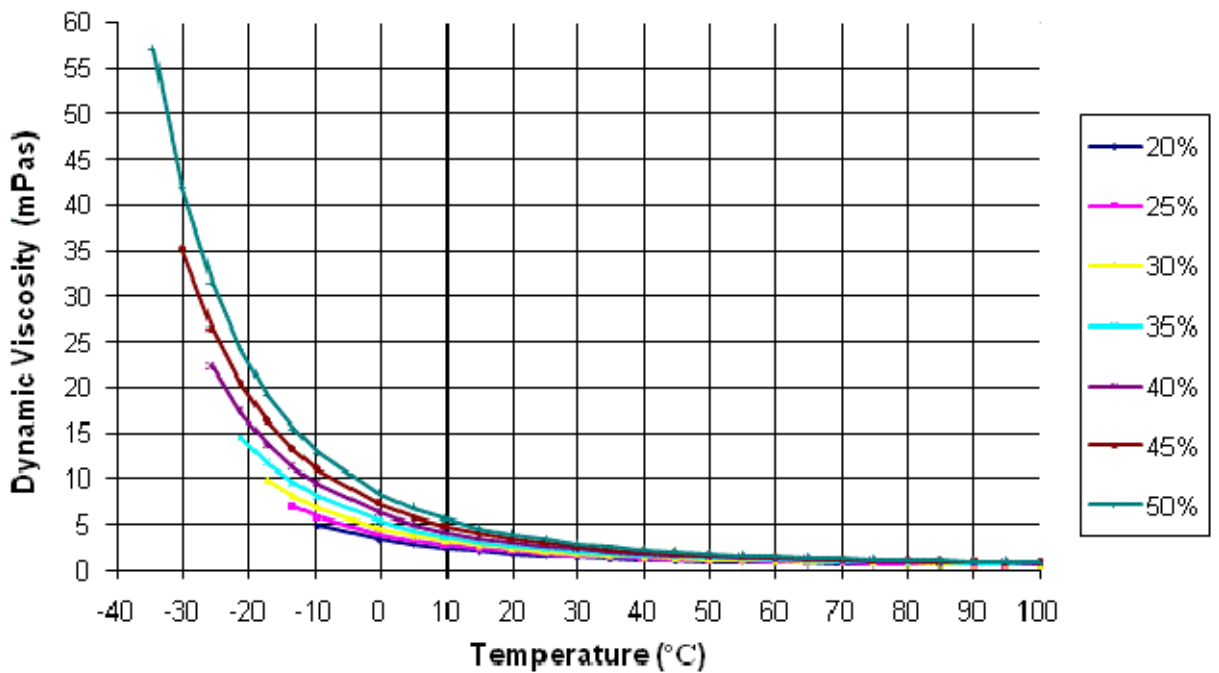




**Thermal Conductivity .vs. % y T<sup>a</sup>**



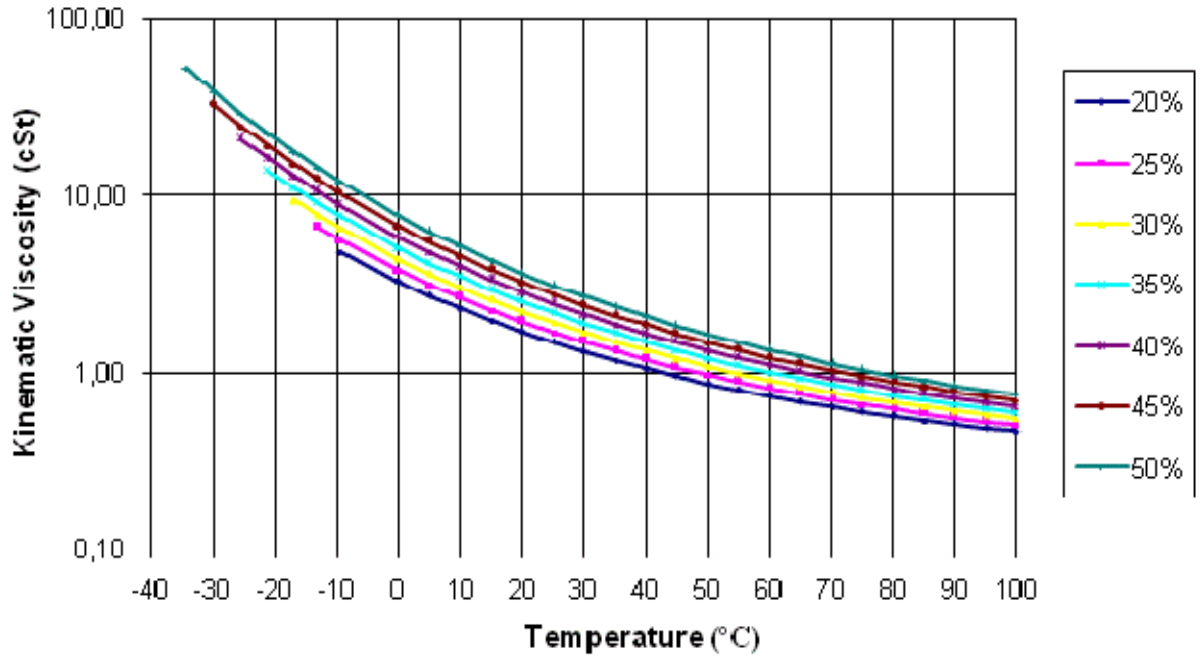
**Dynamic Viscosity .vs. % y T<sup>a</sup>**



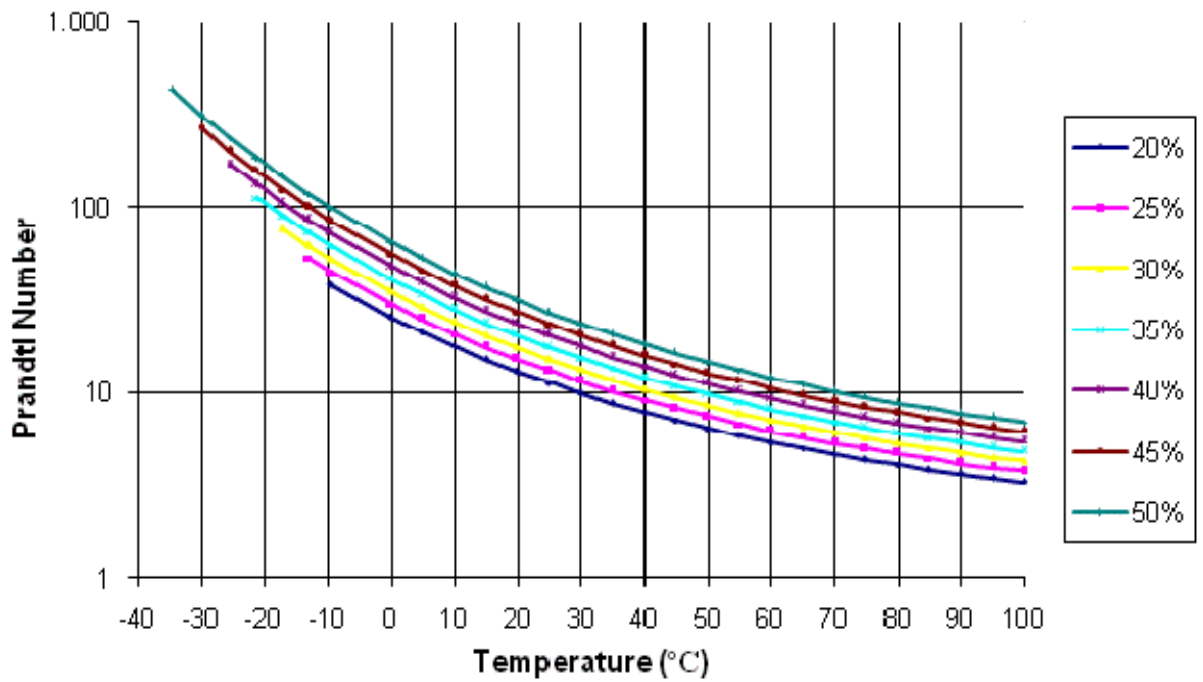




### Kinematic Viscosity .vs. % y T<sup>a</sup>

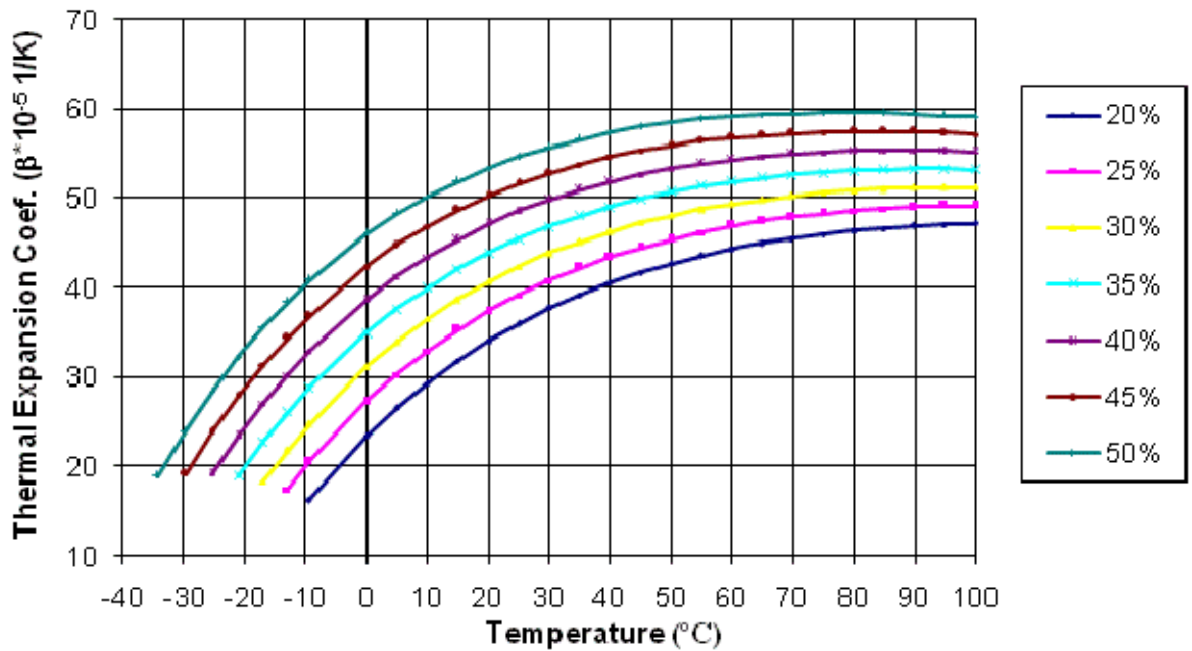


### Prandtl Number .vs. % y T<sup>a</sup>





### Thermal Expansion Coef. vs. % y T<sup>a</sup>



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