SECONDARY REFRIGERANTS

SINGLE SOURCE
HEAT TRANSFER FLUIDS

ENVIRONMENTAL PROCESS SYSTEMS LIMITED
Environmental concerns over Ozone Depletion and Global Warming have prompted the search for alternative refrigeration technologies in order to minimise refrigerant usage.

In many cooling applications heat is transferred to a Secondary Refrigerant which can be any fluid cooled by a primary refrigerant and used to transfer heat without a phase change.

These liquids are also called **Brines, Secondary Coolants, Heat Transfer Fluids** and consists of Anti-freeze Solution, Corrosion Inhibitor(s) and Biocides where applicable to satisfy the temperature and application range.

**WHY TYFO SECONDARY FLUIDS?**

* 50 years experience on secondary refrigerants
* A wide range of **Glycol, Potassium Acetate and Potassium Formate** based solutions.
* One **Stop** Shop for all high, medium and low temperature air conditioning, refrigeration, process cooling and solar energy applications.
  * Ex-stock Supply.
* Full Maintenance & Technical Support Package.
  * Cost Effective Solution.
  * Full Disposal Capability.

**APPLICATION** | **TYFOXIT-F** | **TYFOXIT** | **TYFOCOR-L** | **TYFOCOR**
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Anti-Freeze protection | | | | |
Heat Rejection Circuits | ✓ | ✓ | ✓ | ✓
HVAC Chilled System | ✓ | ✓ | ✓ | ✓
Fire Sprinkler Systems | ✓ | ✓ | ✓ | ✓

**Chilling**

Process Chilling | ✓ | ✓ | ✓ | ✓
Food Products Chilling | ✓ | ✓ | ✓ | ✓
Drinks Cooling | ✓ | ✓ | ✓ | ✓
Fermentation Jacket Cooling | ✓ | ✓ | ✓ | ✓
Ice Market | ✓ | ✓ | ✓ | ✓
Food Immersion Freezing | ✓ | ✓ | ✓ | ✓
Chilled Stores | ✓ | ✓ | ✓ | ✓
Retail Chilled Cabinets | ✓ | ✓ | ✓ | ✓

**Freezing**

Cold Stores | ✓ | ✓ | ✓ | ✓
Retail Freezer Cabinets | ✓ | ✓ | ✓ | ✓
Food Processing Plants | ✓ | ✓ | ✓ | ✓
Petrochemicals | ✓ | ✓ | ✓ | ✓
Industrial Cooling/Freezing | ✓ | ✓ | ✓ | ✓
Pharmaceuticals | ✓ | ✓ | ✓ | ✓

**Defrosting**

Refrigeration Coil Defrosts | ✓ | ✓ | ✓ | ✓
Aviation | ✓ | ✓ | ✓ | ✓
Transport | ✓ | ✓ | ✓ | ✓

**Secondary Coolant**

TES Applications | ✓ | ✓ | ✓ | ✓
Heat Recovery | ✓ | ✓ | ✓ | ✓
Process Cooling | ✓ | ✓ | ✓ | ✓
Cold Stores | ✓ | ✓ | ✓ | ✓
Solar Heating | ✓ | ✓ | ✓ | ✓
Floor Heating | ✓ | ✓ | ✓ | ✓
Preheating | ✓ | ✓ | ✓ | ✓
Indirect Heating | ✓ | ✓ | ✓ | ✓

**WIDE RANGE OF APPLICATIONS:**

We pride ourselves in offering the right product for the right application. Our in-house technical expertise and comprehensive product range provide our customers with a facility whereby the most economical and environmentally beneficial solution can be selected for their applications.

1) **OPERATIONAL TEMPERATURE LIMITS**

For the majority of applications, the fundamental selection criteria starts with the maximum operational temperature limit and the freezing point.

2) **A FOOD GRADE SOLUTION**

Food applications require careful consideration against either direct contact or any secondary circuit contamination.

3) **THERMODYNAMIC & PHYSICAL PROPERTIES**

A careful balance between Low Viscosity and High Specific Heat Capacities leads to less pumping energy which results in less annual overall power consumption and effectively less indirect Global Warming Impact.

4) **ENVIRONMENTAL CONCERNS OVER DISPOSAL**

Any accidental leakage, drainage and the disposal of the proposed fluids must not damage the environment.

5) **MATERIAL COMPATIBILITY**

System components in contact with the solution must be compatible not only with the anti-freeze agent but also the solution additives such as inhibitors and biocides.
Both secondary refrigerants are specially formulated solutions complete with appropriate corrosion inhibitors to satisfy the majority of medium temperature chilling, low temperature freezing and long term storage applications.

Both fluids are designed to offer the most attractive physical and thermodynamic properties to achieve a cost effective and environmentally friendly refrigeration installation.

**KEY FEATURES;**

* **Low Viscosity**
  
  Low viscosity decreases pipeline pressure drops and effectively reduces pipe sizing and pump energy.

* **High Thermal Conductivity**
  
  High thermal conductivity increases heat transfer efficiency and results in smaller heat exchanger design.

* **High Specific Heat Capacity**
  
  High heat capacity for a given volume means smaller volume circulation requirement and effectively smaller pipe and pump selection.

* **Cost Effective Solution**
  
  Carefully selected corrosion inhibitors, stabilisers and buffering agents offer extended life, effective corrosion protection and lower maintenance cost.

* **Safe & Stable**
  
  Non-flammable, non-toxic, no flash point. Accidental or operational service discharge does not damage the delicate environmental balance. Disposal of these fluids can be handled safely in a cost effective way.

**BENEFITS;**

For the majority of cooling / freezing refrigeration and process applications, the combination of the above qualities enables the designer to achieve:-

* **Reduced Line Pressure Drop.**
* **Reduction in Pipe Sizing.**
* **Low Pumping Energy.**
* **Cost Effective Design.**
* **Environmentally Friendly Installation.**
GLYCOL BASED SOLUTIONS;

TYFO Ready-To-Use Glycol based heat transfer solutions are specially formulated with appropriate Corrosion Inhibitors for high demand Cooling, Heating and Solar Heating applications. They can be supplied at various concentration levels to match the application and they offer attractive Physical and Thermodynamic properties for a cost effective design.

* SAFE & STABLE

TYFO range solutions do not contain any Nitrites, Phosphates or Amines. Sustained exposure to high temperatures can cause Glycol solutions to age prematurely but the specially formulated TYFO range provides optimum protection against this undesirable response particularly for high temperature applications such as Solar Heating systems.

* COST EFFECTIVE SOLUTION

The corrosion inhibitors and stabilisers offer long term reliable corrosion protection for the commonly used metallic and non-metallic system components.

TYFOCOR® - Ethylene Glycol based solution which is specially inhibited for conventional chilling, heat rejection, solar panels, heat pumps and anti-freeze applications.

TYFOCOR-L® - Mono-Propylene Glycol based solution specially inhibited for conventional chilling and anti-freeze applications. Furthermore, it is a Food Grade solution and can be applied for immersion freezing of wrapped foods.

TYFOCOR-HTL® - Propylene Glycol based solution which is a Nitrite Free Ready-To-Use heat transfer fluid for Solar Heating equipment under elevated high temperature conditions.

SlurryICE SOLUTIONS;

Binary Ice is a phase change secondary refrigerant which is subject to repeated phase changes during operation and therefore requires special consideration.

EPS has developed a stable glycol based solution complete with stabilisers, anti-corrosion agents and biocides for every type of SlurryICE application including food grade solutions.

Calcium Chloride and Alcohol based binary ice solutions are also available for specific applications.

TECHNICAL SUPPORT;

EPS offers full technical application guides including software packages to calculate all TYFO Secondary Refrigerant's essential physical and thermodynamic properties.

Full system design support is available to assist in proper selection, integration of existing and new installations together with full in-house maintenance capability.

Please consult our technical sales team for your specific application.

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