

# COOL-FIT® – for Secondary and Indirect Refrigeration Systems

A temperature-controlled environment and process is of paramount importance to the efficiency of a winery and the quality of the wine. The fermentation process itself is very temperature-sensitive, requiring storage tanks to be cooled.

## Seasonality Means Limited Time

The wine industry is notoriously seasonal for maintenance and expansion jobs, usually taking place in a limited period, meaning fast work is essential. COOL-FIT is the quickest-to-install secondary piping system in the world.

Pre-insulation and fast solvent cement joining mean an extension to an existing system can be built in just a few days with no need for specialized installers.

Refrigeration systems set demanding requirements on the piping system. The primary piping system is critical to the efficient, reliable operation of the refrigeration plant, but the secondary refrigerant fluid system also plays a critical role in optimizing running costs, energy efficiency, and keeping maintenance to an absolute minimum. Choosing the correct material for the primary and also the secondary piping system are both very important for optimizing plant costs and performance. Often the same piping material is used for the secondary system as for the primary system. In wineries, this means that often copper or steel is used for the whole system. However, using the same material for high-pressure gases and a 45-60 psi fluid system is not necessarily cost-effective in terms of initial costs or total costs of ownership. For example, PVC will

fail in this application because its lowest temperature limit is 32°F; normal systems operation is at a media temperature of 21°F to 29°F (-6°C to -1.5°C).

	ABS	PVC
140°F	Joining: COOL-FIT ABS Solvent Cement Color: Medium Grey	Joining: PVC Solvent Cement Color: Dark Grey
	Ductile	Brittle
	High Impact strength (4x PVC)	Low Impact strength
32°F		
-40°F		

Note: Black ABS found often in hardware stores is for drainage and not designed for pressure systems or cold temperatures

## A Perfect Fit

The COOL-FIT system from GF Piping Systems is specifically designed to meet the requirements of winery cooling. COOL-FIT is used for the glycol piping systems that cool the fermentation tanks, storage areas, heat exchangers, and the air conditioning. Fluid temperatures are in the range of 21°F to 29°F (-6°C to -1.5°C), using glycol or salt solutions.

## Reduce Your Costs

Initial investment costs are important, and COOL-FIT offers a cost-effective solution compared to the current traditional solutions on the market. Total costs relating to the functioning of the plant are also important, specifically operating costs and maintenance.

## No Dripping, No Mold, and Very Efficient

With a Lambda value of 0.026, the polyurethane foam pre-insulated pipe and fittings guarantee no dripping under virtually any environmental conditions. Over the years, traditionally-insulated systems

often absorb water from the atmosphere, which negatively affects the insulating values of the insulation, reducing the efficiency of your system by increasing operating costs. Water absorption can cause ice build-up, causing cracking; the water trapped in an enclosed area also causes corrosion on metal pipes. COOL-FIT ABS Plus is water and vapor tight with a plastic ABS carrier pipe and a high density closed cell polyurethane foam, guaranteeing constant efficient performance.

## Reduce Pressure Loss — Less Pumping Energy

The smoothness of plastic pipes also prohibits build-up of deposits from the fluid, preventing the reduction of flow in the pipe. The pipe roughness factor for COOL-FIT ABS is 0.007, compared to steel's 0.02 (6 times smoother).

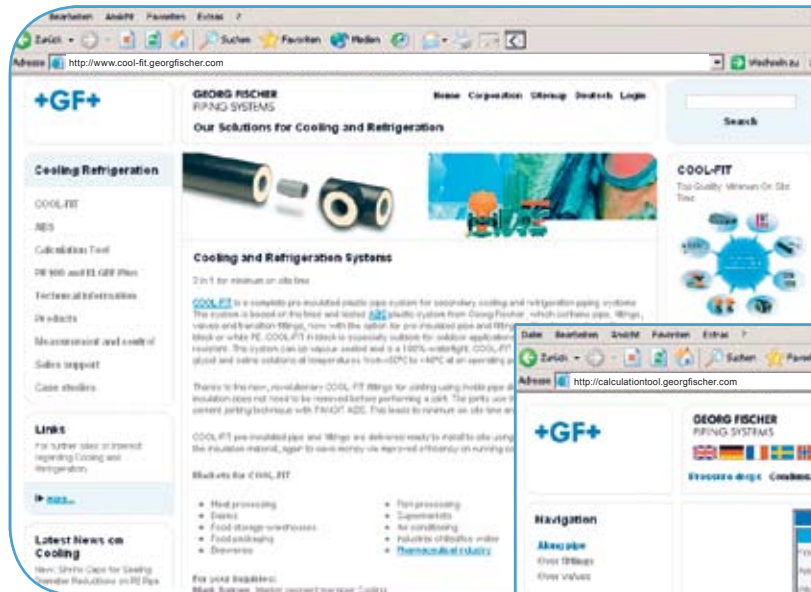
## Maintenance Free

The system is manufactured from high-grade pressure-rated ABS, totally corrosion free, both externally and internally, reducing maintenance to an absolute minimum. COOL-FIT is designed for a lifespan of 25 years plus.

## Full Technical Pre- and Post-sales Support

GF Piping Systems provides an infrastructure of local technical support staff, as well as a website with an online tool for all relevant engineering calculations, product range information, joining and installation instructions. Installation training is provided free of charge.

[www.cool-fit.georgfischer.com](http://www.cool-fit.georgfischer.com)



Please find more information concerning other applications and segments of GF Piping Systems:  
[www.piping.georgfischer.com](http://www.piping.georgfischer.com) → Solutions

The technical data is not binding and not an expressly warranted characteristic of the goods. It is subject to change. Please consult our General Conditions of Supply.



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## Refrigeration Systems in Wineries

Your Application  
→ our System



## COOL-FIT® 3 in 1

- Top Quality
- Minimum On-Site Time



### Complete System

- | COOL-FIT® ABS: 16 mm to 315 mm (3/8" to 12")
- | COOL-FIT® ABS Plus: 25 mm to 225 mm (3/4" to 9")
- | Pipe, fittings, valves, measurement and control

### Parameters

- | 150 psi
- | COOL-FIT® ABS: -40°C to +60°C (-40°F to 140°F)
- | COOL-FIT® ABS Plus: -50°C to +40°C (-58°F to 104°F)

### Suitable Mediums

- | Water
- | Iced Water
- | Ice Slurries
- | Salt Solutions
- | Organic Salt Solutions
- | Glycol Solutions
- | Alcohol Solutions  
(not for use with refrigerants, e.g., R22, ammonia, CO<sub>2</sub>, R407 etc.)

## Plastic Piping System

COOL-FIT® ABS Plus is a complete pre-insulated plastic piping system for secondary cooling and refrigeration piping systems. The system is based on the tried and tested ABS plastic system from GF Piping Systems, in use since 1986, now with the option for pre-insulated pipe and fittings with outer jackets in black.

COOL-FIT® ABS Plus in black is suitable for outdoor applications, because the black PE is 160°F UV resistant.



The system is vapor-tight and 100% water-tight.

Thanks to the new, revolutionary COOL-FIT® nipples for joining inside pipe diameters, the PUR insulation does not need to be removed before performing a joint. The joints use the tried and tested solvent cement joining technique with COOL-FIT® Cement.

The result: minimum on-site time, considerable cost savings and top quality.

### Jacket Pipe

HDPE to DIN 8075 in black.

### Carrier Pipe ABS

- 150 psi rated, cement jointed ABS plastic pipe
- 5 meter (16.4 feet) lengths
- ABS Pipe to ISO 15493

### Hard Polyurethane Foam (PUR)

- Thermal conductivity 0.026 W/m.K (at 50°C)
- Foamed using polyol and isocyanate (no freons)
- Expansion coefficient 0.04 mm/m.K
- Core density > 2.8ft/ft<sup>3</sup>
- Average cell sizes 0.5mm

# Refrigeration and Cooling Systems in Wineries



## Top Quality

COOL-FIT® ABS Plus can improve the efficiency of your secondary system by up to 40%. With a thermal conductivity, lambda value of 0.026 W/m.K, thanks to top-quality high-density PUR insulation combined with ABS's low thermal conductivity (0.2 W/m.K, steel 90 W/m.K), COOL-FIT® offers exceptionally low energy loss characteristics for your piping system.

	COOL-FIT®	
	110 mm [4"]	160 mm [6"]
U-Value [W/m.K]	0.325	0.362

Energy loss 1000 m [3300 ft] of 110 mm [4"] pipe, using Propylene Glycol at -6°C [21°F], ambient +23°C [73°F].

	COOL-FIT® 110/180	Steel & Mineral Wool [32mm or 1¼"]
Energy Loss [W]	9417	12330

Savings over 10 years using COOL-FIT®: \$25,500 (\$0.10 per kW/hr).

## No Condensation or Ice Build-Up

All COOL-FIT® ABS Plus pipes have about a 35 mm insulation thickness, which guarantees the end-user, even under the most severe environmental conditions, no condensation or ice build-up on the outside of the insulation.

Medium	Medium Temperature	Ambient	Humidity	COOL-FIT®
Propylene Glycol	-8°C [18°F]	+30°C [86°F]	up to 85%	no condensation

Wind velocity 0.5 m/sec, COOL-FIT® black.

COOL-FIT® ABS Plus is supported by the external jacket pipe; there's no need for expensive and inefficient insulated pipe supports. No energy bridges are created when hanging COOL-FIT® pipe. The temperature-independent rigid foam also increases the allowable pipe support distances, such as 10.8 ft for d225 [9"] pipe.



### No Corrosion

COOL-FIT®'s complete plastic construction is designed and manufactured by GF Piping Systems. The system includes pipes, fittings, transition fittings to metals, manual valves and measurement and control devices. Zero corrosion both externally and internally guarantees an excellent lifespan.

### Smooth Pipes reduce Pressure Losses

The smoothness of ABS pipes ( $\lambda=0.007$ ) not only prevents encrustation on the internal surface of the pipe, but also reduces pressure losses to a minimum. (Steel surface roughness 0.1 – 0.15)

Pressure Drop	COOL-FIT®
1000m (3300 ft), -6°C (21°F) Propylene Glycol at 20m³/hr (65.6 ft³/hr) in 110 mm (4") pipe	12 psi (0.8 bar)

### Simple Reliable Installation

No welding or special joining equipment is required for safe and reliable installation of COOL-FIT®. The system uses the tried and tested solvent cementing joining technique with COOL-FIT® Cement; training can take place on-site free of charge.

### Low Weight

Low-density plastic enables speedy, easy handling on-site with a simple, cost-effective hanging structure. The low weight and UV/ weather resistant outer jacket makes COOL-FIT® ABS Plus ideal for roof-top installations.

lbs per 100m (328 ft) of piping	COOL-FIT® ABS	COOL-FIT® ABS Plus	Steel
110mm (4")	168	349	496
160mm (6")	369	691	731