



Chart ThermaCalc User Guide

By: Adam Gawle

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www.thermacalc.com



ThermaCalc

Document Control

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Introduction

Chart **ThermaCalc** is a **user-friendly, web-based software tool** developed to simplify your experience with Chart's Ambient Vaporizer product line. It serves as your centralized resource for everything related to Ambient Vaporizers—guiding you seamlessly through every step of the process. **This document can be found in the footer of every page on the website** by clicking on “**User Guide**” for quick reference.

Signing up

To use **ThermaCalc**, **an account is required**. All Chart team members can set up an account. To get started, please contact a Chart representative or reach out directly to Adam.Gawle@chartindustries.com for access. Once you receive your access link, you'll be prompted to create a password. If needed, a **Chart Team member** can assist with password resets. Your account will **remain active for one year** without signing in. After that period, it will be **deactivated** and will **require reactivation by a Chart Team member**.

Signing In

Visit www.thermacalc.com to sign in. You will be greeted with a login screen where you can sign in using the email address and password you set during account creation. For convenience, you can **check the “Remember Me” box to stay logged in**.

Overview

Once signed in, you will be directed to the Vaporizer Sizing page. At the top of the screen, you'll find a toolbar with a variety of options:



- **AAV Sizing:** Input your process conditions to have ThermaCalc recommend a vaporizer size that will fit your needs.
- **CO₂ Sizing:** Use this to specifically size your CO₂ application. This will recommend both an Ambient Vaporizer and a ThermaBlock electric vaporizer.
- **AAV Performance:** Select a model and input process/site conditions to see how your vaporizer will perform.

- **PB Sizing:** Size an external pressure builder to maintain constant pressure in your tank.
- **TH sizing:** Select a trim heater for your system to help guarantee outlet temperature.
- **Catalog:** Search our entire product offering to find more details on your product, including drawings, connection type, nominal flow rating, and recommended mating flange kits.
- **Serial Number Lookup:** Search by serial number or Chart Sales Order number to review information on your existing units.
- **Inventory:** Daily updated on-hand inventory tracker for your quick ship needs.
- **Track Your Order:** Enter your Chart SO number or internal PO number to get the status of your order. This information is updated daily.
- **Contact Us:** Need additional support? The Contact Us page will direct you to the right place.

AAV Sizing

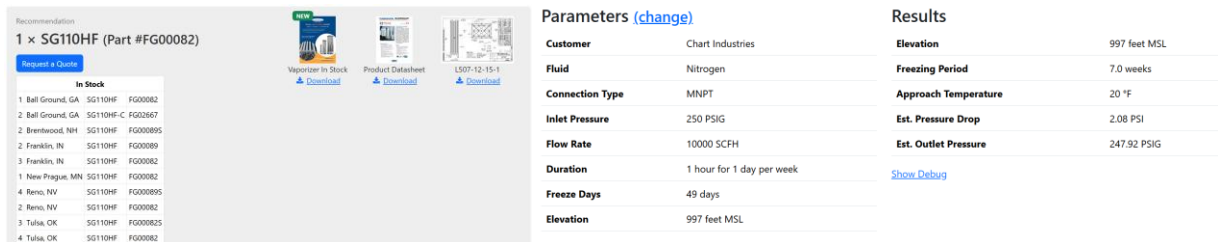
The AAV Sizing calculation will take **your process inputs** and **recommend a vaporizer model(s)**.

Provide the **Fluid, Inlet Pressure, Flow Rate, Duty Cycle and Location**. **Optionally**, you can select your **required connection type and allowable pressure drop** to further refine your calculations. ThermaCalc's internal logic **determines the average January ambient conditions** for the install site to ensure your vaporizer is properly sized for the climate.

Fluid Nitrogen ⬆ Select the process fluid. Please contact Thermax directly if your fluid is not listed as an option. Connection Type MNPT ⬆ Select the connection flange (optional). Inlet pressure 250 PSIG ⬆ Input the pressure of the fluid entering the vaporizer, usually the tank pressure, from 1 to 600 psig. For higher pressure options, please contact Thermax directly. Maximum allowable pressure drop Optional PSI ⬆ Leave blank if you want ThermaCalc to calculate the pressure drop.	Flow rate 10,000 SCFH use gpd/min ⬆ Input the process flow rate you require from the vaporizer. Duty Cycle 8 hours for 6 days ⬆ Select the duty cycle you require for the above flow rate. Location new prague ☐ Indoors Found: New Prague, MN 56071, USA Freeze Period 49 days Elevation 997 feet MSL ⬆ Enter the elevation and the worst-case longest continuous time period the site location is below freezing.
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Fig. 1 – AAV Sizing inputs.

ThermaCalc will **recommend a vaporizer system** based on your inputs and provide you with the **drawing, approach temperature, and pressure drop**. Additionally, ThermaCalc will pull **all products in our catalog that match the recommended model** to show **what we have in stock** and what **options we offer**. Clicking on the **FG** part number will link you to the **catalog page** for that part number (see catalog section for more details).



Recommendation
1 x SG110HF (Part #FG00082)

[Request a Quote](#)

In Stock

1	Ball Ground, GA	SG110HF	FG00082
2	Ball Ground, GA	SG110HF-C	FG02667
2	Brentwood, NH	SG110HF	FG000895
2	Franklin, IN	SG110HF	FG00089
3	Franklin, IN	SG110HF	FG00082
1	New Prague, MN	SG110HF	FG00082
4	Reno, NV	SG110HF	FG000895
2	Reno, NV	SG110HF	FG00082
3	Tulsa, OK	SG110HF	FG000825
4	Tulsa, OK	SG110HF	FG00082

[Vaporizer In Stock](#) [Product Datasheet](#) [L507-12-15-1](#)

Parameters [\(change\)](#)

Customer	Chart Industries
Fluid	Nitrogen
Connection Type	MNPT
Inlet Pressure	250 PSIG
Flow Rate	10000 SCFH
Duration	1 hour for 1 day per week
Freeze Days	49 days
Elevation	997 feet MSL

Results

Elevation	997 feet MSL
Freezing Period	7.0 weeks
Approach Temperature	20 °F
Est. Pressure Drop	2.08 PSI
Est. Outlet Pressure	247.92 PSIG

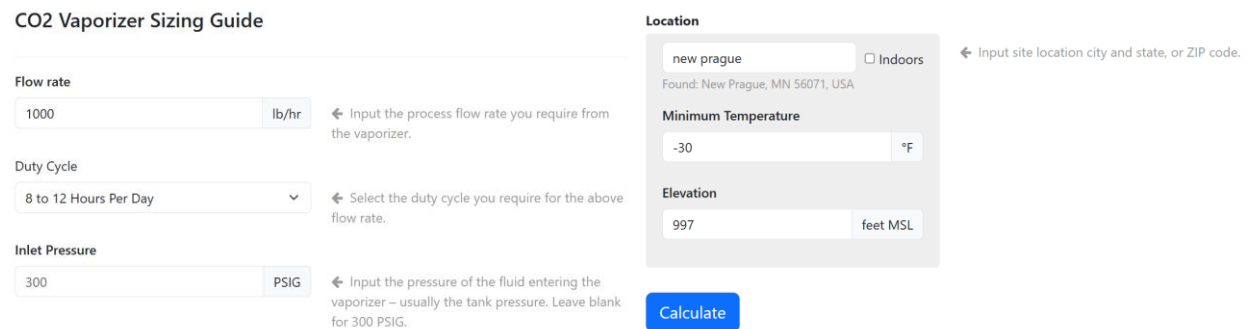
[Show Debug](#)

Fig. 2 – AAV Sizing results.

CO₂ Sizing

Due to the **high boiling point** and **latent heat of vaporization** of CO₂, we have created a **separate CO₂ sizing tab**.

Add your **CO₂ lb/hr flow rate**, **select from the duty cycle options**, **identify your inlet pressure**, and **input your install location** to get your vaporizer system results.



CO2 Vaporizer Sizing Guide

Flow rate
1000 lb/hr ← Input the process flow rate you require from the vaporizer.

Duty Cycle
8 to 12 Hours Per Day ← Select the duty cycle you require for the above flow rate.

Inlet Pressure
300 PSIG ← Input the pressure of the fluid entering the vaporizer – usually the tank pressure. Leave blank for 300 PSIG.

Location
new prague ☐ Indoors ← Input site location city and state, or ZIP code.
Found: New Prague, MN 56071, USA

Minimum Temperature
-30 °F

Elevation
997 feet MSL

[Calculate](#)

Fig. 3 – CO₂ Sizing inputs.

The CO₂ sizing tool will give you three outputs: **Ambient Outdoors, Ambient Indoors, and ThermaBlock Electric unit**. Note that Ambient Vaporizer usage for CO₂ is install location dependent and **outdoor installations are not typically recommended for AAVs in CO₂ service**.

Performance Outdoors

Recommendation
N/A

Parameters [\(change\)](#)

Flow Rate	1000 lb/hr
Duty Cycle	12h
Inlet Pressure	300 PSIG
Elevation	997 feet MSL
Min. Temp.	-30 °F

❗ This calculation could not be run.

- Outdoor siting is not recommended for this location.

[Change parameters](#)

[Show Debug](#)

Performance Indoors

Recommendation

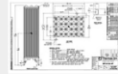
1 × MF2415A-HF

[Request a Quote](#)

No inventory found in stock. Please contact Thermax for availability.



Product Datasheet
[Download](#)



L501-24-15-1
[Download](#)

Parameters [\(change\)](#)

Flow Rate	1000 lb/hr
Duty Cycle	12h
Inlet Pressure	300 PSIG
Elevation	997 feet MSL
Min. Temp.	60 °F

Electric Units

Recommendation

1 × TBV60 or 1 × TBC60

[Request a Quote](#)



PDS 1.7
[Download](#)



PDS 1.7
[Download](#)

Fig. 4 – CO₂ Sizing results.

AAV Performance

Evaluate models you have on hand to see how they will perform in **different fluid conditions and install locations**.

Select from a **list of Chart Vaporizer models** and input your **fluid, inlet pressure, flow rate, ambient temp, humidity and run duration** to see how the selected model will perform.

Ambient Air Vaporizer Performance

Ambient air vaporizer

SG110HF

Ambient temperature

-30

°F

Fluid

Nitrogen

Relative humidity

50

%

Inlet pressure

250

PSIG

Run duration

8

hours

Flow rate

10000

SCFH

[Calculate](#)

Fig. 5 – AAV Performance inputs.

You will be provided with a **drawing of the vaporizer** as well as **outlet temperature, approach temp** (how many degrees below ambient the fluid exits at), **approximate ice accumulation, outlet pressure, and pressure drop**. Additionally, there will be a **table with all products that have matching model numbers** and our **inventory** of those units for your convenience.



Vaporizer In Stock
[Download](#)



Product Datasheet
[Download](#)



L507-12-15-1
[Download](#)

Parameters (change)		Results	
Model	SG110HF Details	Outlet Temperature	-44.06 °F
Model Line	Standard Supergap Details	Approach Temperature	14.06 °F
Fluid	Nitrogen	Ice Thickness	0.11 in
Inlet Pressure	250 PSIG	Outlet Pressure	247.92 PSIG
Flow Rate	10000 SCFH	Pressure Drop	2.08 PSI
Ambient Temperature	-30 °F		
Relative Humidity	50 %		
Run Duration	8 hours		

Fig. 6 – AAV Performance results.

PB Sizing

Size an **external pressure builder** for your tank to **maintain pressure inside the tank** for any fluid **withdrawal rating**.

Add your **tank operating pressure, fluid withdrawal rate, duty cycle, tank or PB orientation, and process fluid** to calculate a **pressure builder** for your application.

Pressure Build Application Guide

Customer Chart Industries ▼ Tank pressure 250 PSIG Withdrawal rate 100000 SCFH	Duty cycle 8 hour ▼ Orientation Vertical ▼ Fluid Nitrogen ▼ Calculate
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Fig. 7 – PB Sizing inputs.

ThermaCalc will provide you with a recommended pressure builder as well as calculated pressure drop through the vaporizer. Additionally, **a table** will be provided at the bottom of our **product catalog** to show you what **we have in stock** and what **your model options** are. Note that the Nominal Rating for PBs is based on **phase change +60-90°F superheat**.

Recommendation

1 × TF088HF-PBV

[Request a Quote](#)

In Stock			
1	Reno, NV	TF088HF-PBV	FG00566S

Updated October 16, 2025.
Contact Thermax for precise availability.

NEW



Vaporizer In Stock
[Download](#)



L511-08-08-1
[Download](#)

Parameters [\(change\)](#)

Customer	Chart Industries
Tank Pressure	250 PSIG
Withdrawal Rate	100000 SCFH
Duty Cycle	8 hour
Orientation	Vertical
Fluid	Nitrogen

Results

Recommended Model	1 × TF088HF-PBV
Pressure Drop	0.00 PSIG

Fig. 8 – PB Sizing results.

Catalog

Chart's entire Ambient Vaporizer catalog has been uploaded to ThermaCalc for your reference. This **searchable and sortable database** is your **one-stop shop** for all **information pertaining to a specific vaporizer**. The catalog consists of the following columns:

- **Part Number:** This is the identifying item number. Provide this part number to any Chart representative to provide the unique identifier for a given vaporizer.
- **Model:** This is the vaporizer model number. We offer each model with many different options to suit all your installation needs.
- **Material:** Identify the **material of the wetted parts**. Note that Monel Lined and Electropolished models are denoted with SS material as well as standard SS.
- **Connection:** Chart offers a wide range of connections for all installation types. Here you will find **connection size and type** of the specific part number. Not sure which connection is best or can't find the model you need with the connection you want, contact us!
- **MAWP:** Maximum allowable working pressure of the vaporizer.

- **Nominal Rating:** Nominal flow rating, in SCFH of the vaporizer. Nominal ratings are determined by the following process conditions: **8 hrs of LN₂ flow at 150 PSIG and 50°F ambient temperature starting with a fully defrosted vaporizer.** Note: Chart recommends a **1:1 ratio between run time and defrost time** to ensure proper thawing.
- **Rating Case: Nominal ratings change depending upon usage.** Here we denote what the nominal rating case is to reduce confusion. For a **Process Vaporizer**, the nominal rating denotes **maximum 8 hr flow rate to maintain an outlet temp 20°F below ambient.** For a **Pressure Builder**, the nominal rating denotes **a maximum 8 hr flow rate** through the PB to maintain an **outlet temperature of boiling point +60-90°F** to ensure proper vaporization.
- **Mating Kit:** Quickly identify a mating flange kit to streamline installations and ensure you have the proper hardware on site.
- **In stock:** Easily see what we have in stock for your quick ship needs.

Click on the **Part Number** to view the item card **including drawing, process data, and recommended Flange Mating Kit.**

Serial Number Lookup

Input the **Chart sales order number** or a **serial number** found on the data plate of your vaporizer into the search bar to find out helpful information on your vaporizer, including **Part Number, Nominal Rating, Connection Types, Where/When it was built, and Warranty Status.** Note: The database dates back to 1/1/2017, anything built prior will not be accessible. For information on older units, contact Chart.

Inventory

Need a vaporizer fast? The inventory tab is **updated daily** with all **our on-hand inventory.** This contains **QTY on hand, current storage location, and part number information** from the catalog.

Track Your Order

Track your open vaporizer orders to the latest updates from production. **Input either your Chart assigned SO number or the PO number you submitted to get the status of your order updated at 9:00 am EST daily.**

Contact us

Need help? The **Contact Us** page has been **personalized to your organization** and contains the email address of your **Sales Representative, Customer Service, Technical Service, and Product Management** to ensure you get in contact with the correct team to receive assistance ASAP. Additionally, you will find our **shipping address, general inquiries phone number, and website**. Not sure who to contact? **Product Management** will happily direct you **to the party responsible**.

Safety & Legal

Warnings

- CO₂ service: Outdoor ambient vaporizers are often not recommended due to CO₂ properties and site conditions. Validate installation assumptions and consider ThermaBlock for challenging cases.
- Electrical equipment and installations must comply with applicable codes and local regulations. Verify voltage, amperage, clearances, and environmental ratings.

Disclaimers

- ThermaCalc results are for estimating purposes only and do not constitute guaranteed performance for your specific installation.
- Final equipment selection, installation, and safety compliance remain the responsibility of the owner/operator.
- See legal terms at <https://thermacalc.com/legal>.

FAQs & Troubleshooting

- **No recommendation returned after I click Calculate.**

Check that Duty Cycle is realistic for ambient conditions, verify allowable pressure drop, and ensure input units are correct.

- **My recommended model changed when I altered Duty Cycle.**

Duty Cycle affects the effective thermal capacity; higher duty cycles may require additional surface area or more units.

- **Pressure Drop is too high**

Chart offers a wide variety of piping configurations to help decrease pressure drop. Look for model numbers containing -DH or -LPD in the catalog to decrease pressure drop.

- **Outlet temperature is too low.**

Reduce flow per unit, increase defrost time, add a trim heater, or consider an indoor installation.

- **Why is there ice accumulation in the Performance view?**

Icing depends on humidity, temperature, and duty cycle; ensure defrost periods are adequate (Chart recommends a 1:1, run-to-defrost ratio for nominal ratings).

Glossary

- **AAV:** Ambient Air Vaporizer
- **Approach Temperature:** Outlet temperature relative to ambient (ambient – outlet).
- **Duty Cycle:** Proportion of time the vaporizer is on-stream (e.g., 8 hours/day, 5 days/week).
- **FG:** Finished Goods, referencing part number.
- **LB/HR:** Pounds per hour CO₂ rating.
- **MAWP:** Maximum Allowable Working Pressure.
- **Nominal Rating (Process):** Maximum 8-hour flow to maintain outlet 20°F below ambient under nominal conditions.
- **Nominal Rating (PB):** Maximum 8-hour flow through PB to maintain outlet $\approx + 60$ -90°F superheat.
- **PB:** Pressure Building Vaporizer.
- **PSIG:** Pounds per square inch, gauge.
- **SCFH:** Standard Cubic Feet per Hour.