

Chart Products Provide for: Higher Grow House Yields, Better Extraction Control, Longer Shelf Life



ENRICHMENT

CO₂ Enrichment

- Improve Grow Yields
- Better Climate Control
- Safer with No Open Flames
- No Risk of Carbon Monoxide Poisoning



EXTRACTION

CO₂ Extraction

- Subcritical Carbon Dioxide (CO₂)
- Supercritical (CO₂)
- Increase CBD Oil Output
- Lower Operating Costs



PACKAGING

LN₂ Packaging

- Liquid Nitrogen (LN₂) Preservation
- Modified Atmosphere Packaging (MAP)
- Oxygen Reduction
- Extended Shelf Life



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Cannabis & CBD Oil
Cryogenic CO₂ & LN₂ Solutions

DESIGN | ENGINEERING | MANUFACTURING | PROJECT MANAGEMENT | INSTALL | COMMISSIONING | TRAINING | LIFECYCLE MAINTENANCE

OPTIMIZE EXTRACTION QUALITY,
INCREASE YIELDS & SHELF LIFE



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ENRICHMENT:

Greenhouse Carbon Dioxide Enrichment

Enrichment of cannabis plants via supplemental carbon dioxide shortens crop cycles, improves quality, and increases yield up to 30%. Use of Chart's vacuum jacketed liquid CO₂ storage containers offer several benefits over competitive technologies and storage schemes:

- Vacuum jacketed containers require no supplemental refrigeration systems
- On site CO₂ storage provides better climate control vs. CO₂ generators which produce heat and increased humidity levels
- A much safer installation with no open flames, flammable fuel storage, or risk of carbon monoxide poisoning

Enrichment Equipment Offerings

Chart offers a complete line of vacuum jacketed storage containers ranging in sizes from 450 lbs to over 50 tons. Unique benefits of these tanks include the following:

- State of the art vacuum technology allows liquid CO₂ to be stored for long periods of time without the need for supplemental refrigeration systems
- Tanks are designed to be filled safely on site without the need to exchange empties for full
- Tanks and vaporization capacity can be sized to economically support existing grow house operations and provide flexibility for future growth
- Tanks can typically be operated without any need for a source of power



Perma-Max™ & Carbo-Max®
Bulk CO₂ Systems



Perma-Max™ 12,000 VHP MicroBulk
Storage System providing CO₂ for enrichment
at a cannabis farm.

EXTRACTION:

Supercritical/Subcritical CO₂

Pressurized carbon dioxide advantages over other solvents commonly used for extraction operations:

- CO₂ is residue free. All CO₂ gases off when exposed to ambient conditions
- Non flammable and the safest of all methods of extraction
- Heat and pressure kills any micro-organisms that might be left in the plant
- “Tunable” by varying pressures and temperatures to better control separation

Unique Equipment Solutions for High Pressure CO₂

Chart supplies equipment to supply both high pressure liquid or gaseous CO₂ required for extracting operations.

Perma-Max™ 1400 XHP

- Best suited for smaller extraction operations
- Can hold up to 1400 lbs of CO₂ and designed to be filled on site
- Operating pressures up to 750 psig and peak flow rate of 2 lbs/sec/nozzle
- Tank can be used for either liquid or gas use
- Does not require any on board pumps or compressors
- No need for high pressure bottle change-outs containing unusable residual product. Tanks can typically be operated without need for a source of power



Perma-Max™ 1400 XHP
CO₂ MicroBulk Storage
System

Trifecta® Pro CO₂ Supply System

- Designed for large extraction operations
- Operating pressures up to 850 psig & continuous flow rates up to 900 lbs/hr
- System utilizes liquid CO₂ off of a standard bulk CO₂ tank (6-50 ton)
- System does not require any on board pumps or compressors
- No need to shutdown operations during CO₂ deliveries to the bulk tank



Trifecta Pro CO₂
Supply System

PACKAGING:

LN₂ Dosing for Extended Shelf Life

An exact dose of liquid nitrogen (LN₂) is introduced seconds before the cannabis container is sealed. The small dose of LN₂ gasifies, expanding to 700 times its volume, pushing the oxygen out of the container for an extended shelf life.

- Documented extended shelf life studies show an increase from 63 to 80 days providing larger batching flexibility at production runs, improving overall costs



LN₂ Dosing System