

## GreenCut Plasma FAQ

### 1. What is GreenCut Plasma?

GreenCut Plasma is a fluid for treatment of water in CNC plasma water tables. It prevents hot-spotting, corrosion, bacteria and foaming.

### 2. How long has GreenCut Plasma been on the market?

Since 2005.

### 3. In how many tables can GreenCut plasma be found?

GreenCut Plasma is in around 2,000 tables ranging from 2ft x 2ft hobby CNC plasma tables to 60,000 gallon industrial CNC plasma tables.

### 4. How different is GreenCut Plasma from plasma quenches?

Very different! GreenCut Plasma does not contain any toxic chemicals and is entirely safe. It does not contain any nitrites (toxic), biocides (formaldehyde = carcinogenic). GreenCut Plasma is originally approved by Environment Canada under the Environmental Choice Program.

### 5. How is GreenCut Plasma mixed?

It is mixed with water at 20:1 ratio.

### 6. How much GreenCut Plasma do I need for my table?

Use the following calculation:

Cutting table dimensions (L, W, H in feet); results in US gallons

$$\mathbf{L \times W \times H \times 0.375 = \text{volume of GreenCut Plasma needed in US gallons}}$$

Note: 1 cubic foot = 7.5 US gallons and 20:1 dilution afford 0.375 factor

Example:

Table size: L = 30ft, W = 13ft, H = 1.5ft

$30 \times 13 \times 1.5 \times 0.375 = \mathbf{220 \text{ gallons}}$  of GreenCut Plasma needed for this 4,388 gallon table

GreenCut Plasma is sold in  
pail (20L) – 5 gallons  
drum (205L) – 54 gallons  
tote (1,000L) – 264 gallons

**7. How good is GreenCut Plasma at preventing corrosion?**

Excellent! GreenCut Plasma contains superb anti-rust chemicals. These chemicals coat any metal they come into contact with. Rust will develop when GreenCut Plasma is diluted down to 50:1.

**8. Does GreenCut Plasma prevent bacterial growth and odours?**

Yes! GreenCut Plasma does this without a need for biocides. GreenCut Plasma biodegrades oils coming from the cut metal on which bacteria feed and grow. This is done on contact of GreenCut Plasma with oil. In order to assure this contact, circulation of the liquid is required.

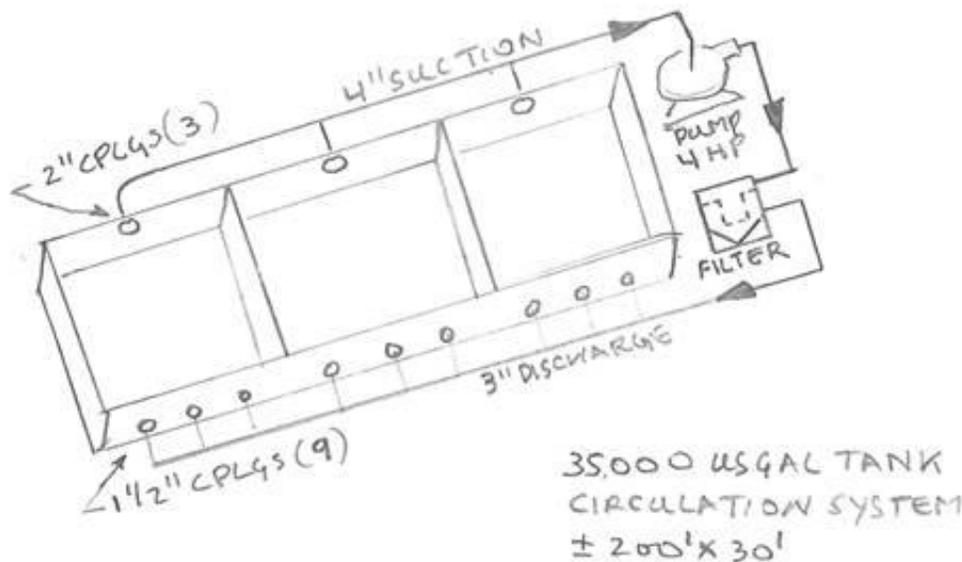
**9. What do I need circulation for?**

GreenCut Plasma contains anti-rust chemicals that coat metals. In order to assure even and continuous coating, circulation in the table is required. Additionally, GreenCut Plasma prevents bacterial growth by biodegrading oils on contact. In order to assure this contact, circulation is required. Circulation also prevents hot-spotting caused by plasma arc torch(s) operating to 25,000°F.

**10. How do I circulate my table?**

Use a pump of appropriate size. For smaller tables, a fractional horse-power pump is sufficient. Use one inlet in the upper portion of the table close to the fluid surface to prevent circulating the metal crud and use several outlets (3-4) closer to the bottom pan of the table at the opposite end.

Below is a circulation system design on a 35,000 gallon table with three table compartments:



If you use the table less frequently (1-2x/week) circulate the table every 3 days for 1 hour or so.

### 11. Do I need to filter the fluid?

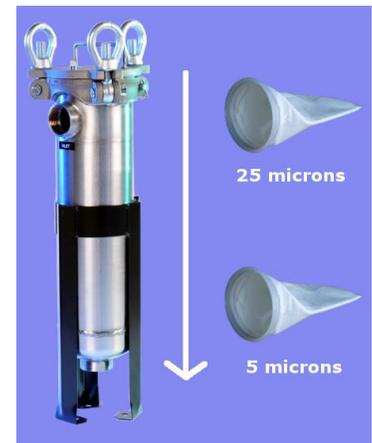
No! However, if you install the filtration system, you will assure the fluid performance and will avoid costly waste water disposals. The fluid will stay clean, green and will perform.

We have a customer with a 15,000 gallon table running 1 to 2 shifts/5 days per week who hasn't replaced the water in 8 years, which helps them save significant money both on waste water disposal and on GreenCut Plasma replacement.

Filtration System Design:

1. Use filter housing of appropriate size
2. Use single or 2-stage filtration – 1 bag@25 microns; & to achieve best results 1 bag @5 microns
3. Change filter bag(s) as needed – typically 1x per week or once pressure differential of 15 psi is reached.

Burning wooden slats generates charcoal as it combusts from the torch, and filters require more frequent changes. Plastic slats are recommended to reduce filter replacement frequency.



### 12. Does GreenCut Plasma evaporate?

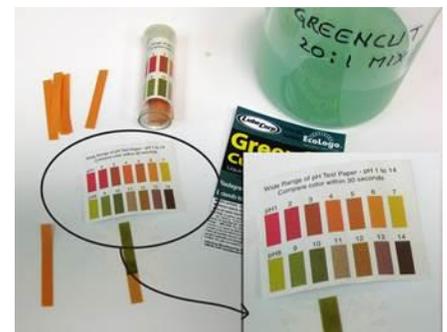
No. GreenCut Plasma does not evaporate. Water in the table does and needs to be added. GreenCut Plasma does not thermally degrade and does not cause harmful vapours. When adding water, make sure to maintain 20:1 ratio.

### 13. How long does GreenCut Plasma last?

GreenCut Plasma on its own has unlimited shelf life. In the table, GreenCut Plasma is consumed by coating the metal (table and cut metal) and therefore fresh GreenCut Plasma needs to be added occasionally. Adhering to proper maintenance, GreenCut Plasma does not have to be replaced for at least 3 years. LubeCorp Manufacturing Inc. has an industrial customer that has not changed out the fluid for over 8 years in a 15,000 gallon CNC plasma table.

### 14. How do I maintain GreenCut Plasma?

GreenCut Plasma is very easy to maintain. Check pH of the fluid in the table every 2 weeks with pH strips (these can be purchased in a local chemical supply store, online or from LubeCorp). If pH is within 9 – 10, no action is required. If pH is below 9, add more fresh GreenCut Plasma fluid to adjust the pH to 9 – 10 range. Perform an easy visual check – the colour of the fluid should be green. Consult the GreenCut Plasma Data Sheet for maintenance tips.



Assure circulation of the fluid in the table. While circulating, the fluid can be filtered to prolong its life.

#### **15. How do I dispose of GreenCut Plasma?**

GreenCut Plasma is safe, non-toxic and can go directly into the sewer providing the metal shavings have been filtered out and no oil is visibly floating on top of the fluid. GreenCut Plasma biodegrades up to 5% of the oil on contact and there should be no oil present. LubeCorp's customers have received direct sewer disposal approvals from authorities in different jurisdictions across the North America.

#### **16. Do I submerge the cut metal or not?**

Yes! Our experience over the years, and numerous tests by our customers have shown that submerging the metal plate partially into the water reduces dross and prevents smoke. This is counterintuitive to recommendations by some table manufacturers. Leaving an air gap between the metal plate and water defies the purpose of the water, which is to catch the smoke and provide plate cooling.

#### **17. Will submerging of the metal plate cause its corrosion?**

No! GreenCut Plasma coats the metal plate as well and protects it from corroding. This thin layer does not leave marks and can be rinsed with water easily.

#### **18. How do I clean GreenCut Plasma off the plate?**

As mentioned before, GreenCut Plasma will coat and protect the plate from corrosion. If there is a need for cleaning the plate, for instance to paint or weld the plate, GreenCut Plasma can be removed by rinsing with pressurized water or wiping down with a damp cloth. After drying, the plate can be painted, powdercoated or welded.

Some customers run the plates through the wheelabrator prior to welding.

A customer cutting aluminum plates with a CNC plasma cutting system is applying an adhesive onto the plate followed by TIG welding the plates afterwards. They found out that the plates wouldn't stick. Because the customer couldn't pressure-wash the plates and couldn't run them through wheelabrator, simple washing with water followed by wiping the joints with water/isopropanol (50:50) prior to adhesive application solved the problem.

#### **19. What about Aluminum and explosions?**

It has been stated throughout various literature sources that plasma cutting of aluminum using water tables can cause explosion due to accumulation of hydrogen gas.

Aluminum plate does not react with water by itself as it is coated by oxidized aluminum. When cut by plasma, small pieces of exposed aluminum metal fall into the water to be oxidized and form the hydrogen gas. Hydrogen is an explosive gas when mixed with air. The lower explosion limit of hydrogen in air is 18.3%, which means there has to be a mixture containing minimum of 18.3% of hydrogen and 81.7% of air dissolved in water. Solubilities of these gases in water do not allow for such a mixture to be formed. Additionally, hydrogen in water gets dissipated into the air during the fluid circulation. **As a result, it is not true that hydrogen can explode in the water.** A dangerous scenario can occur when hydrogen escaping water gets trapped in the air gap

underneath the sheet metal and forms an explosive mixture with the ambient air. This requires an extensive amount of hydrogen to be collected in the air gap, which is technically not easy to achieve in an open system. To assure the plasma operator's safety, plasma torch manufacturers justly warn of the hydrogen gas accumulation in the air gap and possibility of explosion.

However, by eliminating the air gap not only can you observe a better cut, depending on torch setting, as proven by many of our customers, but also you eliminate potential risks associated with hydrogen trapped in the air gap. By circulation, not only do you assure better corrosion protection, prevent hot-spotting and bacteria formation, but you also dissipate hydrogen gas in the water.

A more likely dangerous scenario can occur when a hot plasma torch (they run at temperatures up to 25,000°F) heats water in the table, trapping the superheated steam in the air gap, causing small air bursts. This is true for all metals.

#### 20. Can GreenCut Plasma be winterized?

Yes! LubeCorp has customers with plasma tables in unheated spaces. Some of our customers experience problems with freezing of the water in winter months. GreenCut Plasma can be mixed with a water/propylene glycol mixture instead of water to prevent freezing. Please contact LubeCorp to discuss the ratio to assure the best performance.

More questions?

Call us at **1-800-661-6100**

E-mail us at [info@lubecorp.com](mailto:info@lubecorp.com)

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