

Green or Greenwashed?

In relation to desiccant types

- **Environment**
- **Packaging**
- **Performance**

Objective vs. Subjective Definitions

ORGANIC

(in descending order of objectivity)

- Containing Carbon
- Related to or derived from living matter
- Produced without added chemical fertilizers, pesticides, antibiotics, hormones
- Healthy, Safe, “Natural” (“Organic does NOT mean it is safe, nutritious or healthy”)

Natural

- “Existing in or caused by nature, not made or caused by humankind”

Examples of Natural Things

- Kittens
- Rattlesnakes
- Asbestos
- Cyanide
- Puppies
- Deadly Nightshade

Environmental Impact

SILICA GEL

- ✗ Synthetic material manufactured under high energy input.
- ✗ High wastewater output.
- ✗ Recyclable but economically not feasible.

CALCIUM CHLORIDE & STARCH

- ✓ Salt which is used as a food additive in food processing. 'GRAS' status by FDA.
- ✓ By- product from the Solvay process.
- ✓ Use of CaCl₂ reduces waste storage needs.
- ✗ Recyclable but economically not feasible.

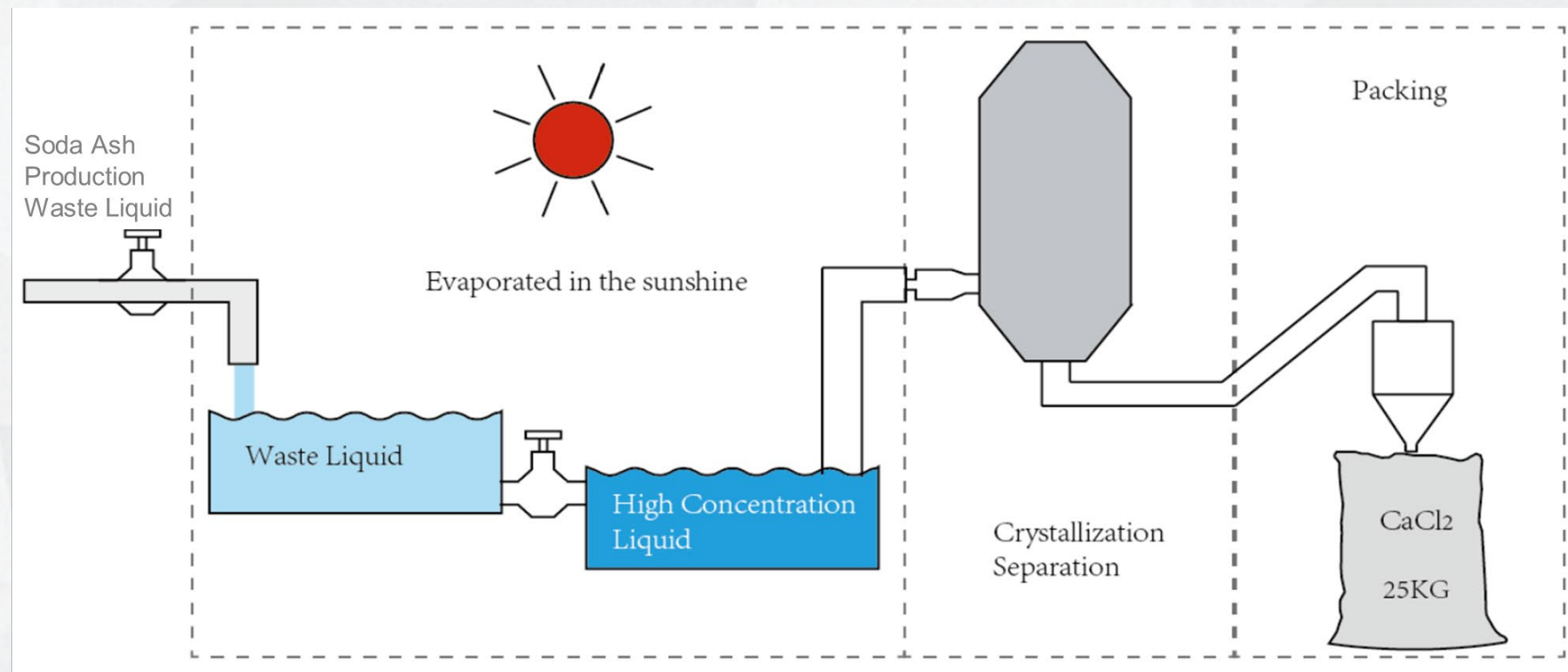
BENTONITE / DRY CLAY

- ✓ Natural clay product mined from calcium rich montmorillonite deposits.
- ✗ Open pit mining contributes to degradation of habitats and groundwater flows.
- ✗ Habitat rehabilitation not standard in many countries.
- ✗ Recyclable but economically not feasible.

Sustainable

Calcium Chloride: Is recycled from the production of Soda Ash

* Soda Ash is an essential raw material used in the manufacture of glass, detergents and soaps, chemicals and other industrial products.



Packaging

CALCIUM CHLORIDE & STARCH (Plastic)

- ✓ High mechanical resistance.
(Will not tear easily)
- ✓ Excellent water barrier.
- ✗ Not biodegradable.
- ✗ Recyclable but economically not feasible.

BENTONITE / DRY CLAY (Kraft Paper)

- ✗ Low mechanical resistance
(Can tear easily)
- ✗ Hygroscopic & poor water barrier.
- ✗ Biodegradable, but release of
greenhouse gases CO₂ and
Methane during biodegradation.
- ✗ Recyclable but economically not
feasible.
- ✗ 20% of package weight is made of
thermoplastic copolymers (glue)
=> not plastic but similar

Performance

Types of Desiccant – Performance Comparisons

Here are the FACTS on Performance:

CALCIUM CHLORIDE & STARCH

- ✓ *High absorption capacity:*
Absorbs up to 400% of original weight.
- ✓ 90% less desiccant needed compared to Silica Gel and Dry Clay.
- ✓ **ABSORBS and CAPTURES** moisture with no risk of moisture release back into the surrounding environment.
- ✓ Slower acting diffusion absorbent with high absorption and retention capacity.
- ✓ Slower activating desiccant:
Continues to absorb for 3 months.
- ✓ Wide temperature application range between -5°C to +90°C.
- ✓ Keeps relative humidity steady when temperatures drop sharply.
- ✓ Suitable for all applications as in-box desiccant for ocean shipments and long-term storage.











BENTONITE DRY CLAY/ SILICA GEL

- ✗ Low adsorption capacity:
Ad-sorbs Max 35% of its original weight.
- ✗ 10 times more product is required to protect the same area compared to Calcium Chloride desiccant.
- ✗ Ad-sorbs and releases moisture back into the air when it reaches max adsorption (30%) with a high risk of moisture release > 35°C.
- ✗ Surface adsorbent with low adsorption and low retention capacity.
- ✗ Fast activating desiccant:
Reaches saturation within 3 days
- ✗ Narrow temperature application range between 15°C and 30°C.
- ✗ Relative humidity increases to dangerous levels when temperatures drop sharply.
- ✗ **Not suitable** for application as in-box desiccant for ocean shipments and long – term storage.



SUPER DRY Desiccant versus Clay Desiccant

Test environment: 30°C, 90%RH

Days	Super Dry DS 25g			Clay 32g		
	Weight (g)	Water retention(g)	Absorption Rate	Weight (g)	Water retention (g)	Absorption Rate
0	30	-	-	33.7	-	-
⋮	⋮	⋮	⋮	⋮	⋮	⋮
3	57.8	27.8 	111.1%	44.5	10.8 	33.8%
⋮	⋮	⋮	⋮	⋮	⋮	⋮
5	71.2	41.2 	164.7%	45.2	11.5 	35.9%
⋮	⋮	⋮	⋮	⋮	⋮	⋮
8	81.0	51.0 	204.0%	45.3	11.6 	36.6%
⋮	⋮	⋮	⋮	⋮	⋮	⋮
15	93.1	63.1 	252.5%	45.1	11.4 	35.6%
⋮	⋮	⋮	⋮	⋮	⋮	⋮
25	105.6	75.6 	302.4%	45.0	12.3 	38.4%

Why is the desiccant ingredient important?

- SD absorbs nearly 3 times the amount of water vapor ending day 3, 6 times overall.
- Clay absorbs little after day 3.
- Clay outgasses water vapor into the cargo environment (day 15)

Super Dry typical effectiveness 60-120 days depending on conditions

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