

Hydrogen Tablet Safety Brief

Residue, purity and format-suitability considerations for magnesium hydrogen tablets — and how SPE/PEM electrolysis differs. Hydrogen Wellness™ · 2026 edition.

A tablet must consume itself to release hydrogen

Hydrogen generation and tablet disintegration are the same event. Reacted magnesium, unreacted metallic fines, acid salts and tableting excipients are all released into the water you drink or bathe in. There is no membrane, filter or separation stage between the source material and the user.

1. The reaction



An organic acidulant (malic, tartaric or fumaric acid) lowers local pH and strips the passivating oxide skin from elemental magnesium so the metal can reduce water. Hydrogen is the product sold; magnesium hydroxide is the by-product left behind. Output peaks early and decays to zero once the pellet is spent, while dissolved hydrogen outgasses continuously from the water surface.

2. What remains in the water

- **Magnesium hydroxide, $\text{Mg}(\text{OH})_2$** — sparingly soluble; the milky cloudiness and white film on glassware and bath surfaces.
- **Unreacted magnesium fines** — pressed powder rarely reacts to completion; particulates settle as turbidity unrelated to dissolved hydrogen.
- **Acid salts** — the acidulant remains as dissolved magnesium malate, tartrate or fumarate, shifting the dissolved-solids profile.
- **Excipients** — stearates, celluloses and silicas are tableting necessities, inert to the reaction, and disperse unchanged.

3. Why purity questions arise

- Magnesium is refined from ore and specified by grade, not guaranteed as absolute purity; grades differ between industrial, food and pharmaceutical feedstock.
- Composition is only as consistent as the powder lot, acid lot and press conditions behind it.
- Certificates of analysis, where published, state limits per production lot — a limit is a threshold, not a zero.
- Where no lot-level testing is published, the composition of the residue is unknown to the buyer.

4. Why tablets do not scale to bath volumes

A drinking glass is roughly 250 mL; a domestic bath is 150–250 L. Reaching a meaningful dissolved-hydrogen concentration across that volume requires a proportionally enormous reactive mass — and every gram of magnesium hydroxide, metallic fines, acid salts and binders scales with it. Bath immersion is a sustained 20–40 minute exposure against a reaction that finishes in minutes, over an open surface that outgasses throughout. Nothing about the process is instrumented or verifiable.

5. Format comparison

Criterion	Magnesium tablets	SPE/PEM machines
Hydrogen source	Magnesium–water reaction	Electrolysis of purified water
Purity	Variable; inferred from lot	99.99%, measurable
Residue in water	Yes — intrinsic to the mechanism	None
pH effect	Acidic phase then alkaline shift	No by-product pH shift
Output profile	Single decaying burst	Continuous at rated flow
Bath volumes (150–250 L)	Not practical	Engineered for it (Bath One™)
Inhalation	Not applicable — no separated gas stream	Dedicated separated output
Commercial duty	Recurring cost, residue management	Continuous-duty capable
Cost structure	Recurring per dose	One-time; 10,000 h rated stack life

Table 1 — Magnesium hydrogen tablets compared with SPE/PEM hydrogen equipment.

6. Format scoring (editorial 0–10)

Criterion	Tablets	Machines
Purity control	3	9
Residue profile	2	10
Output consistency	4	9
Bath suitability	1	10
Inhalation suitability	0	10
Commercial use	1	10
Portability	9	4

Table 2 — Editorial assessment of each format against the criterion, based on the chemistry and engineering described in sections 1–4.

7. Questions to ask a tablet manufacturer

- What is the magnesium grade, and what is its origin?
- Can you supply a lot-level certificate of analysis covering heavy metals?
- What is the full excipient list, including binders, lubricants and flow agents?
- What water volume was the product formulated and labelled for?
- What dissolved-hydrogen concentration is claimed, measured at what point and in what vessel?

8. How SPE/PEM electrolysis avoids the issue

A solid polymer electrolyte / proton exchange membrane splits purified water and separates the hydrogen stream from oxygen at the membrane. The feed is purified water and electricity — no pellet, acidulant or binder enters the water, so no reaction residue can form. Because the gas stream can be sampled and laboratory-tested, purity is a measured figure rather than an assumption about a supply chain, and output is held at a specified flow rate for the length of a session.

Further reading: hydrogenwellness.co/learning/hydrogen-tablets/how-they-work · [/heavy-metal-warning](#) · [/tablets-vs-machines](#) · [/residue-explained](#)

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