v1.14	*SBGx*	*Iron Oxide*	*Iron Oxide-Hydroxide*	*Iron Chloride*	*Air Injection*
Investment into					
Storage and Handling	outside, low	covered, low	covered, low	covered, high	not applicable
Dosing Equipment	none / low	none / low	medium	medium	high
Risk of / to					
Exposure / Personnel	low	low	low	high	n. a.
Explosion	low	low	low	low	high
Corrosion	low	low	low	high, **HCl** [A]	high, **H_2SO_4** [B]
Gas Impurities	low	low	low	low	high
Reaction Products	none	none	none	**HCl**	**H_2SO_4**
Other Characteristics					
Chemical Composition	FeO and Fe_2O_3 [C]	Fe_2O_3	FeO(OH)	$FeCl_2$ or $FeCl_3$	n. a.
Reactive Iron Ion Content	> 60% [D]	30% - 60%	15% - 30%	10% - 14%	n. a.
Reaction Speed	high	low	low	high	low
Deposit / Buffer Effect	high	high	medium	none	none
Effect on Bacterial Health	positive	normal	normal	negative	negative
Effect on Gas Yield	positive	normal	normal	0 to minus 32% [E]	negative
Trace Element Addition	recommended	required	required	required	required
Shelf Life	> 12 months	> 12 months	< 12 months	< 12 months	n. a.
Price per chem. Reaction	medium	high	medium	high	n. a.

Anecdotally, *highly toxic* iron(II) sulphate, aka *Grünsalz* or *Eisendünger* in German, can also be used as an additive: $FeSO_4 + H_2S \rightarrow FeS\downarrow + \mathbf{H_2SO_4}$

[A] IUPAC: **Hydrogen chloride**, other name: **Hydrochloric acid gas**

[B] IUPAC: **Sulfuric acid**

[C] See *www.swissbiogas.com/Resources - Download Area/Effects of Different States of Fe on Anaerobic Digestion: A Review*

[D] Analysis March 2023

[E] See *www.swissbiogas.com/Resources - Download Area/The effect of iron salt on anaerobic digestion and phosphate release to sludge liquor*