Nature's Micros
- Trusting in Nature's Genius –
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All you need to brew your AEM

One part EM-1
One part blackstrap molasses
20 parts clean warm water, best 85 F – 105 F
Clean food grade plastic bottle, bucket or drum, all with lid,
pH Strips from 3.0 to 5.5 (one of our available products) (Buy now)

Directions for making 1 Quart of AEM

Fill the bottle half full with warm water
Add 1.5 oz of molasses and mix well to dissolve the molasses
Add 1.5 oz of EM-1
Top off with warm water leaving 1" to 2" airspace, close the lid and shake
Keep in a warm spot

Directions for making 1 Gallon of AEM

Fill the container half full with warm water
Add 3/4 cup of molasses and mix well to dissolve the molasses
Add 3/4 cup of EM-1
Top off with warm water leaving 1" to 2" airspace, close the lid and shake
Keep in a warm spot; in hot summer times in the sun covered with a black plastic bag

Directions for making 5 Gallons of AEM

Fill the bucket half full with warm water
Add 32 oz of molasses and stir well to dissolve the molasses
Add 32 oz of EM-1
Top off with warm water leaving 1" to 2" airspace, stir and close the lid
Keep in a warm spot; in hot summer times in the sun covered with a black plastic bag

Can you make AEM from AEM?
It is not recommended to do that for quality assurance. In a second-generation brew the microbes may multiply in a different proportion and deviate from the original formula. Exceptions are to save costs of big environmental projects i.e. reviving lakes.

Details for Best Fermentation

Let it burp!
During the fermentation pressure will build up in the container starting around the second day. Simply open the container, let it burp, and seal it again. Do this frequently. We do not recommend glass containers because they may explode. Using glass with an airlock is an exception. Buckets and drums often do not close 100% tightly and the release of gas (CO_2) happens automatically.

When is the AEM ready?
It is ready when the gassing stops and it does not smell anymore like molasses but sweet sour like the original EM-1. The pH should have dropped to 3.5 – 4. On the surface white flakes of beneficial yeast are appearing. (See picture) The days to maturity depend largely on temperature, normally between 9 and 18 days. If it is cooler it can take one month or longer.

Heating
The ideal temperature is 85F – 105F. In cooler seasons you can place the AEM brew next to your heating source, a radiator, space heater etc. In summer the sun is a good heating source. Cover your container with a black plastic bag. When nights are cool you may take it inside or cover containers that are hard to move to keep warm.

Checking pH
The first microbes to activate are the lactic acid bacteria producing acids by digesting the sugars. This allows the pH to drop down to 4 or below within the first 3 - 7 days. The AEM is ready to use when the pH narrows the target value of 3.5. You can easily measure this using some pH paper. The variety we sell has a perfect testing range. It goes from 3.0 - 5.5 and works very accurately and consistently.

(Buy now)

Troubleshooting
If the AEM got moldy or smells bad: The container may not have been completely airtight or may not have been clean or both.

Storage & Shelf Life
Shelf life is two to three months or longer by storing at room temperature, storage in the fridge is not recommended. The AEM wants to be stored tightly closed and with as little access to air as possible. Flexible containers can be squeezed to create a vacuum. Half full containers can be poured into smaller ones for prolonged storage. Beneficial yeast growing on top does not diminish quality but it shows that air had access and I would use up the AEM soon.

Optional Ingredients
I like to add some more ingredients to the AEM mix to support fermentation and add to the AEM quality.
Organic apple cider vinegar (1oz per Gallon) helps to bring down the pH quickly to secure fermentation and prohibit growth of pathogens.
Sea salt (one tsp per Gallon) supports microbial metabolism.
Azomite (1level tsp per Gallon) supplies minerals.
Love & gratitude, blessings and music may be the most appreciated additions in the microbial community

Insider Information

Neutralizing Toxins
Exposing the fermenting AEM in a transparent container part time to sunlight causes the phototrophic bacteria to multiply in higher proportion enhancing the capacity of AEM to neutralize toxins.

Alternative AEM Mixing Proportions

You can go with less EM-1 and less molasses to start the AEM. Instead of the recommended proportion of 1 part EM-1 to one part molasses to 20 parts of water you can choose 30 or 40 parts of water. It will make good quality AEM. The main difference is a shorter shelf life. This is insignificant if you know you will use it up quickly. The more concentrated you start the mix, the longer the shelf life it will have.

Mature and Immature AEM

There are cases where it is important to use completely mature AEM, meaning that all the molasses is metabolized. For cleaning purposes you really want to avoid any residues of molasses, otherwise surfaces you are cleaning get sticky and do attract flies.
When cleaning ponds with AEM you don't want any molasses present either because you would promote algae growth. For garden applications a bit immature AEM is ok if you are in need of a solution. A little bit of molasses allows the microbes to come with their "lunch package". Actually fairly high-diluted molasses can be used as an effective soil amendment.