Key to Successful
Grain Fermentation

Effygren is one such specialized formulation for improving performance of starch based alcohol fermentation.

Praj’s BioProducts Division specializes in development of innovative products that add ‘Economic Value’ to fermentation processes. The expertise comes from vast experience of design and operation of alcohol processes based on Corn, Wheat, Rice, Sorghum, Bajra and Cassava,

The product is a combination of specific micro-elements and biochemicals. The product is formulated after careful study of the process requirements.
Key Actions of Effygren in Fermentation

Eliminates bacterial contaminants and also Effygren contains enzyme consortium that convert resistant starch into metabolisable sugars. Effygren provides vital elements and growth factors for yeast growth and metabolism.

- Avoiding sluggish and stuck fermentations ensuring good yeast growth by reducing contamination
- Minimizes by-product formation and improves organoleptic properties of alcohol
- Ensures high alcohol concentration and allows recycle of slops and condensates

Increase in efficiency and yield of alcohol by 5 to 10 liters / MT of starch. Increased alcohol concentration in mash by about 0.3 to 0.6 % High rate of Yeast Growth & Metabolism.

Low Residual starch/sugar loss Prevention of bacterial contamination and reduction in volatile acid in mash

Advantages of Effygren

Low By-product formation in Mash

Highly Improved Neutral Spirit quality

Improvement in Thin slop recycle quantity

Reduction in the fermentation hold up time due to quick reaction

Effygren has been successfully tested and regularly used in several grain alcohol plants

Effygren Specifications :

Appearance : Free flowing amorphous power which readily goes in suspension in water or mash
Dosage : Typically between 65 to 70 Gram / Kiloliter of distillery capacity (Total spirit production) / Sppm on wash volume
Packing : Easy to use laminated poly-pouches of custom-made sizes for your distillery plants

Shelf Life : Effygren can be stored at below 25°C in a cool & dry place for up to 12 months without loss of activity

Note : Effygren does not interfere with the normal liquefying and saccharifying enzymes used in grain starch conversion

The product is Kosher & Halal Certified
EFFYGREN
Material Safety Data Sheet

Section 1. Chemical Product And Company Identification

Commercial Product Name: EFFYGREN
HSN Code: 2942.00.90
Chemical Characterization: Nutrients for Yeast
Product Use: In Grain base distilleries as growth enhancer for yeast.
Contact Information: Praj Industries Ltd, ‘Praj Tower’, 274 & 275, Bhumkar Chowk-Hinjewadi Road, Hinjewadi, Pune – 411 057, India
Tel: +91-20-22941000/71802000

Section 2 – Information On Ingredient

Active component: Nutrient blend of Proteins, Minerals, Vitamins from Soyflour & Yeast.
CAS Number: 68513-95-1, 8013-01-2, 7733-02-0, 14168-73-1
Hazardous Ingredient: None
Exposure Limit: Not Established

Section 3 - Hazards Identification

Emergency Overview: Yeast growth enhancer for Industrial ethanol production
Description: White / off white powder
Odour: Slight Pleasant smell

Potential Health Effect:
Inhalation: Inhalation of dust may induce sensitization in susceptible individuals. Avoid inappropriate handling, which may result in dust generation.
Eye Contact: Non Irritating to the eyes. Avoid direct contact with the eyes.
Skin contact: Non irritating to the skin.
Ingestion: Ingestion of material is not known to cause adverse health effect.

Section 4 - First Aid Measures

Skin Contact: Wash skin with water
Eye Contact: Rinse eyes with water
Ingestion: Rinse mouth and throat thoroughly with water. Drink water.
Inhalation: Remove from exposure. If symptoms of irritation or sensitization occur call a doctor.

Section 5 - Fire and Explosion Data

This document is intellectual property of PRAJ Industries Limited and is generated for confidential business purposes. It should not be used for purposes other than designated or reproduced without written permission from PRAJ Industries Limited.
Seller warrants that this product formulation confirms to its chemical description and is reasonably fit for the purpose referred to in the directions for use when used in accordance with the directions under normal conditions. The conformance of product performance will be done strictly by the analytical protocols given by the seller. All risks on account of use of the product not in accordance with the directions will be with the buyer. Seller makes no other warranty or representation of any kind, express or implied, about the product, including NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS OF THE GOODS for purposes other than specified by the seller. No such warranties shall be implied by law and no agent of seller is authorized to alter this warranty in any way except in writing with a specific reference to this warranty. The exclusive and maximum possible remedy against the seller shall be a claim for damages not to exceed the purchase price of the product, without regard to whether such a claim is based upon breach of contract/ warranty. Any dispute, controversy or claim arising out of this contract or breach their of, shall be settled by arbitration in accordance with the provisions of Indian arbitration and reconciliation act 1996 and shall be governed by Indian laws and shall have exclusive jurisdiction of Pune Maharashtra Court.
Section 6 - Accidental Release Measures

Personal precautions : Ensure suitable personal protection during removal of spillages.
Environmental precautions : Do not allow to enter drains, sewers or watercourses.
Methods for cleaning up : Adsorb spillages onto sand, earth or any suitable adsorbent material. Transfer to a container for disposal.

Section 7 - Handling and Storage

Handling:

Advice on safe handling : Avoid contact with skin and eyes. Do not breathe spray.

Storage:

Requirements for storage areas and containers : Keep container tightly closed in a cool and dry place and protected from direct exposure to sunlight. Do not store in humid area.

Section 8 - Exposure Controls & Personal Protection

Recommended Personnel Protective Equipment

Respiratory Protection : Not required under usual conditions of use.
Hand protection : Impermeable gloves recommended.
Eye protection : Protective glasses or eye shield.
Protection : Wear suitable protective clothing

Exposure Guidelines :

PEL (OSHA) : Not established
TLV (ACGIH) : Not established

Section 9 – Physical And Chemical Properties
Form : Powder  
Colour : White / Off white  
Odour : Slightly Pleasant  
P H : Not applicable  
Melting point : Not applicable  
Flash point : Not applicable  
Ignition temperature : Not applicable  
Vapour pressure : Not applicable  
Density : Not applicable  
solubility : Water soluble  
Additional Information : Explosive property no data. Oxidising property no data

Section 10 – Stability and Reactivity
This material is stable under normal conditions of use.

<table>
<thead>
<tr>
<th>Conditions to avoid</th>
<th>None known</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials to avoid</td>
<td>None known</td>
</tr>
<tr>
<td>Hazardous decomposition products</td>
<td>None known</td>
</tr>
</tbody>
</table>

Section 11 – Toxicological Information

<table>
<thead>
<tr>
<th>Acute toxicity</th>
<th>Vapour or aerosol may cause irritation of the eyes, nose and respiratory tract.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin irritation</td>
<td>Repeated or prolonged skin contact may result in slight irritation.</td>
</tr>
<tr>
<td>Eye contact</td>
<td>May cause eye irritation.</td>
</tr>
</tbody>
</table>

Section 12 – Ecological Information

| Ecotoxicity      | No eco-toxicity hazard is known. |
| Environmental Effects | No environmental hazard is known. |
| Persistence/Degradability | The organic components of the product are biodegradable |
| Bioaccumulation  | Not available |
Section 13 – Disposal Consideration

| Disposal Method | Do not empty into drains. Disposal should be in accordance with local, state or national legislation. |

Section 14 – Transport Information

<table>
<thead>
<tr>
<th>UN No.</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper shipping name</td>
<td>None</td>
</tr>
<tr>
<td>Hazardous components</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

Section 15 – Regulatory Information

The product is non hazardous and contains all the regulatory information required -
TSCA – Not applicable,
SARA – Not Applicable
OSHA – Not applicable
Clear water act – Not applicable
Clean Air act – Not applicable
Other International Regulations – No information available.

Section 16 – Other Information

The Information contained in this material Safety Data Sheet, as of the issue date, is believed to be true and correct. However, the accuracy or completeness of this information and any recommendations or suggestions is made without warranty and guarantee.

Since the conditions of use are beyond the control of company, it is the responsibility of the user to determine the conditions of safe use of these preparations.