ADM Lecithin
As an emulsifier, soy lecithin is used in food applications as an aerating agent, viscosity modifier, dispersant and lubricant.

Typically, an emulsion is a suspension of small droplets of one liquid in another liquid with which it is incapable of mixing. Oil-in-water (O/W) and water-in-oil (W/O) are the two primary types of emulsions.

Lecithin’s molecular structure makes it an effective emulsifier for the interaction of water and oil. Phospholipids, the major component of lecithin, are partly hydrophilic (attracted to water) and partly hydrophobic (repelled from water). It is lecithin’s ability to simultaneously interact with both oil and water that makes it such an effective and stable emulsifier.

When introduced into a system, an emulsifier such as lecithin acts to help maintain a stable emulsion between two unmixable liquids. The emulsifier decreases the surface tension between the two liquids and allows them to mix and form a stable, heterogeneous dispersion.

Gravies & Sauces
- Reduces fat separation
- Reduces formulation costs
- Improves product consistency, texture/mouth feel

Taco meat
- Reduces fat separation
- Helps bind fat and keep it in suspension throughout the process

Beverages & Nutritional Beverages
- Improve stability & viscosity
- Improving dispersion of protein
- Functional at low levels
- Enhanced mouth feel (less gritty)
LOW FAT DRESSINGS
- Emulsifies, replaces both mono- and diglycerides and polysorbates
- Improves viscosity

Margarines & Spreads
- Water in oil emulsifier
- Improves stability
- Stabilizes shelf life
- Promotes easier ingredient blending

INFANT FORMULA
- Oil in water emulsifier
- Aids in proper blending and mixing

RECOMMENDED ADM LECITHINS
- Yelkin™: Series of standardised lecithins that provide moisture retention and emulsification in high-viscosity applications
- Ultralec™: ADM’s exclusive, ultrafiltered, deoiled lecithin is used in hydrophilic instantising applications, and it provides excellent emulsification properties in reduced-fat and flavour-sensitive applications
- Beakin™: A series of complexed lecithin products with low viscosity, sprayable at ambient temperature, and used in lipophilic instantising applications
- Performix™: Edible blends of soy lecithin and other surface-active ingredients. Products available for low, as well as, high HLB applications
- Thermolec™: Modified lecithins with enhanced oil-in-water emulsification performance

EMULSIFYING METHODS
- Mechanical mixing with a high shear mixer
- High pressure extrusion
- Sonic vibration
- Static mixing
- Colloid milling
**Hydrophilic-Lipophilic Balance**

**The HLB chart**
The HLB chart illustrates the approximate hydrophilic (water loving)-lipophilic (oil loving) balance value of our lecithin products in relation to other commonly available emulsifiers. HLB is an index of the predicted preference of an emulsifier for oil or water—the higher the HLB, the more hydrophilic the molecule; the lower the HLB, the more hydrophobic the molecule.

The values expressed in the table can serve as a useful guideline in helping you select the most appropriate ADM lecithin for your emulsification purposes.

**Determining the proper usage level**
Typical usage levels of lecithin in an emulsion system are:
1-5% of the fat for W/O
5-10% of the fat for O/W

The amount of lecithin used is dependent upon factors such as the pH, the inclusion of proteins and gums and the salt concentration.

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**HLB Table for ADM Lecithin**

<table>
<thead>
<tr>
<th>HLB</th>
<th>Water in Oil (1-6)</th>
<th>Water in Oil or Oil in Water (6-8)</th>
<th>Oil in Water (8-12)</th>
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<tbody>
<tr>
<td>1</td>
<td>BEAKIN LV3</td>
<td>BEAKIN LV1</td>
<td>PERFORMIX A</td>
</tr>
<tr>
<td>2</td>
<td>BEAKIN LV1</td>
<td>YELKIN T</td>
<td>CAPSULEC SERIES</td>
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<tr>
<td>3</td>
<td>YELKIN LV1.5</td>
<td>T</td>
<td>BEAKIN LV30</td>
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<tr>
<td>4</td>
<td>ULTRALEC E</td>
<td>57</td>
<td>PERFORMIX CC</td>
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<tr>
<td>5</td>
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<td>PERFORMIX PS</td>
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<tr>
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<td>57</td>
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<tr>
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<td>THERMOLEC WFC</td>
<td>200</td>
<td>CAPSULEC SERIES</td>
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<tr>
<td>10</td>
<td>YELKIN T1018</td>
<td>5</td>
<td>BEAKIN LV30</td>
</tr>
<tr>
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<td>PERFORMIX PS</td>
<td>200</td>
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<tr>
<td>12</td>
<td>PERFORMIX E</td>
<td>57</td>
<td>PERFORMIX A</td>
</tr>
</tbody>
</table>

**Reference Emulsifiers**

- **MONOGLYCERIDES**
- **Sorbitan Esters**
- **ETHOXYLATED MONOGLYCERIDES**
- **POLYGLYCEROL ESTERS**
- **SUCROSE ESTERS**
<table>
<thead>
<tr>
<th>Product Line</th>
<th>Product</th>
<th>Typical Analyses</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FLUID LECITHINS</strong></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
| **STANDARD LECITHINS** | Yelkin T | Al, % 65 min.  
H2O, % 1.0 max.  
HI, % 0.05 max.  | Color: 17 max.  
AV: 30 max.  
Form: Opaque plastic | Viscosity: N/A  
Baked goods, cheese products, confections, dairy products, icings, frostings, instant beverage mixes, instant foods, margarines, and release agents |
|                   | Yelkin TS | Al, % 62 min.  
H2O, % 1.0 max.  
HI, % 0.05 max.  | Color: 17 max.  
AV: 30 max.  
Form: Translucent fluid | Viscosity: 100 max.  
(Stokes, 25°C) |
|                   | Yelkin SS | Al, % 62 min.  
H2O, % 1.0 max.  
HI, % 0.05 max.  | Color: 14 max.  
AV: 30 max.  
Form: Translucent fluid | Viscosity: 100 max.  
(Stokes, 25°C) |
|                   | Yelkin DS | Al, % 62 min.  
H2O, % 1.0 max.  
HI, % 0.05 max.  | Color: 12 max.  
AV: 30 max.  
Form: Translucent fluid | Viscosity: 100 max.  
(Stokes, 25°C) |
| **PURIFIED LECITHIN** | Yelkin Gold | Al, % 62 min.  
H2O, % 0.5 max.  
HI, % 0.05 max.  | Color: 14 max.  
AV: 30 max.  
Form: Translucent fluid | Viscosity: 100 max.  
(Stokes, 25°C)  
Baked goods, confections, instantized foods, instant beverage mixes, and dairy products |
| **COMPLEXED LECITHINS** | Beakin® LV1 | Al, % 50 min.  
H2O, % 0.8 max.  
HI, % 0.05 max.  | Color: 14 max.  
AV: 25 max.  
Form: Translucent fluid | Viscosity: 20 max.  
(Stokes, 25°C) |
|                   | Beakin LV3 | Al, % 32 min.  
H2O, % 0.8 max.  
HI, % 0.05 max.  | Color: 14 max.  
AV: 25 max.  
Form: Translucent fluid | Viscosity: 10 max.  
(Stokes, 25°C) |
|                   | Beakin LV30 | Al, % 32 min.  
H2O, % 0.8 max.  
HI, % 0.05 max.  | Color: 14 max.  
AV: 25 max.  
Form: Translucent fluid | Viscosity: 10 max.  
(Stokes, 25°C) |
|                   | Performix™ CC | Al, % 50 min.  
H2O, % 0.8 max.  
HI, % 0.05 max.  | Color: 14 max.  
AV: 28 max.  
Form: Translucent fluid | Viscosity: 30 max.  
(Stokes, 25°C) |
|                   | Performix™ E | Al, % 50 min.  
H2O, % 0.8 max.  
HI, % 0.05 max.  | Color: 14 max.  
AV: 26 max.  
Form: Translucent fluid | Viscosity: 30 max.  
(Stokes, 25°C) |
|                   | Performix PS | Al, % 50 min.  
H2O, % 0.8 max.  
HI, % 0.05 max.  | Color: 14 max.  
AV: 26 max.  
Form: Translucent fluid | Viscosity: 65 max.  
(Stokes, 25°C) |
| **MODIFIED LECITHINS** | Yelkin 1018 | Al, % 58 min.  
H2O, % 1.0 max.  
HI, % 0.05 max.  | Color: 17 max.  
AV: 38 max.  
Form: Opaque plastic | Viscosity: 250 max.  
(Stokes, 25°C)  
Baked goods, dairy products, instant beverage mixes, instant foods, release agents, and confections |
|                   | Thermolec® 57 | Al, % 56 min.  
H2O, % 0.8 max.  
HI, % 0.05 max.  | Color: 14 max.  
AV: 28 max.  
Form: Translucent fluid | Viscosity: 30 max.  
(Stokes, 25°C) |
|                   | Thermolec 200 | Al, % 62 min.  
H2O, % 0.8 max.  
HI, % 0.05 max.  | Color: 14 max.  
AV: 30 max.  
Form: Translucent fluid | Viscosity: 75 max.  
(Stokes, 25°C) |
|                   | Thermolec WFC | Al, % 60 min.  
H2O, % 1.0 max.  
HI, % 0.05 max.  | Color: 13 max.  
AV: 30 max.  
Form: Translucent fluid | Viscosity: 100 max.  
(Stokes, 25°C) |
| **DEOILED LECITHINS** |           |                                                                                  |                                                                            |
| **ULTRA-FILTERED DEOILED LECITHINS** | Ultralec® P | Al, % 97 min.  
H2O, % 1.5 max.  | Color: Light gold  
Form: Powder | Viscosity: N/A  
Baked goods, confections, dairy products, ice cream stabilizers, icings, frostings, instant beverage mixes, instant foods, and meat in sauces and gravies |
|                   | Ultralec F | Al, % 97 min.  
H2O, % 1.5 max.  | Color: Light Gold  
Form: Fine granules | Viscosity: N/A  
Baked goods, confections, dairy products, ice cream stabilizers, icings, frostings, instant beverage mixes, instant foods, and meat in sauces and gravies |