EVOH Barrier Resins
Introducing Kuraray and EVAL™ EVOH

Kuraray Co., Ltd. was established in 1926 in Kurashiki, Japan, for the industrial manufacture of chemical fibres. As the world’s largest producer of vinyl acetate monomer (VAM) derivatives, Kuraray has long been a leader in high gas barrier technology and development. Today the Kuraray Group consists of about 70 companies, employing nearly 7,000 people worldwide.

A global market leader
Kuraray has been manufacturing and marketing ethylene vinyl-alcohol copolymers (EVOH) under the name EVAL™ since 1972, and remains the world leader in EVOH production and market development.

EVAL™ is one of Kuraray’s core businesses and is produced globally in Japan, the USA and Europe. The sales and technical development of EVAL™ is supported by specialised local teams in each region.

EVAL™: building better barriers
EVAL™ adds superior barrier functionality to multilayer plastic structures. 1 mm of EVAL™ provides about the same gas barrier properties as a 10 metre thickness of LDPE, so even very thin EVAL™ layers provide excellent results. EVAL™ is widely used as a functional gas and flavour/aroma barrier in food, medical, pharmaceutical and cosmetic packaging, and as a gas and solvent barrier in industrial, construction, agricultural and automotive fuel system applications.

EVAL™ around the world
Kuraray Co. Ltd. was the first in the world to commercially produce EVOH resins, building a plant with an annual production capacity of 10,000 MT in Okayama, Japan. The first overseas plant was built near Houston, Texas, USA, which now has the world’s largest EVOH production facility with a capacity of 35,000 MT/year. Kuraray’s European EVAL™ site was the first in the region, and began operation in 1999. A doubling of production capacity to 24,000 MT/year in 2004 has continued Kuraray’s commitment to local supply as Europe’s largest EVOH production site.

Europe
- EVAL Europe nv (Antwerp, Belgium)
  • Capacity: 24,000 tons/year
- Europe’s first and largest EVOH production facility

Americas
- Kuraray America Inc. (Texas USA)
  • Capacity: 35,000 tons/year
- The world’s largest EVOH production facility

Asia - Pacific
- Kuraray Co. Ltd. (Okayama, Japan)
  • Capacity: 10,000 tons/year
- The world’s first EVOH production facility

<table>
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<th>Properties of EVAL™</th>
<th>EVAL™ applications</th>
</tr>
</thead>
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<td>Gas barrier</td>
<td>Food packaging</td>
</tr>
<tr>
<td></td>
<td>Heating and cooling pipes</td>
</tr>
<tr>
<td></td>
<td>Cosmetic packaging</td>
</tr>
<tr>
<td></td>
<td>Vacuum insulation panels</td>
</tr>
<tr>
<td></td>
<td>Health Care packaging</td>
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<td>Solvent barrier</td>
<td>Fuel tanks</td>
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<tr>
<td></td>
<td>Fuel pipes</td>
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<td>Agrichemical bottles</td>
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<td>Anti-flavour scalping</td>
<td>Liquid containers</td>
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<td>Aroma preservation</td>
<td>Food and cosmetic packaging</td>
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<td>Anti-static</td>
<td>Stain proof wallpaper</td>
</tr>
<tr>
<td>High transparency</td>
<td>Multiple uses</td>
</tr>
<tr>
<td>Surface glass</td>
<td>Cosmetic packaging</td>
</tr>
<tr>
<td>Hydrophilic</td>
<td>Multiple uses</td>
</tr>
</tbody>
</table>
**About EVAL™, a unique technology**

EVAL™ EVOH combines the excellent gas barrier properties and resistance to organic solvents of polyvinyl-alcohol with the easy processing and water resistance of polyethylene. EVAL™ is a crystalline copolymer with the following molecular structure:

$$\text{Ethylene and Vinyl Alcohol} \quad (\text{CH}_2\text{-CH}_2)_m \quad \text{(CH}_2\text{-CH})_n \quad \text{OH}$$

**Properties**

**Superior gas barrier properties**
EVAL™ resins have outstanding gas barrier properties. Without a gas barrier, oxygen may penetrate packaging and spoil the contents. EVAL™ keeps oxygen out and safeguards quality, making it especially suitable for food, medical, pharmaceutical, cosmetics, agricultural and industrial packaging applications.

**Flavour and aroma barrier**
While preventing oxygen and undesirable odours from sneaking into the package, the barrier properties of EVAL™ effectively maintain fragrances and lock the aromas in.

**Lustre and transparency**
EVAL™ resins are transparent, providing protective barrier while allowing a clear view of the contents when desired. An outside EVAL™ layer adds an attractive high gloss, that due to its antistatic properties resists dust buildup.

**Excellent flex-crack resistance**
High-barrier structures containing an EVAL™ layer have an excellent flex-crack resistance. An EVAL™ layer makes sure that the integrity of the barrier remains unharmed during transport, handling and storage or even when the package is folded.

**Processability of EVAL™ resins**
EVAL™ resins are thermoplastic polymers and can be processed on conventional fabrication equipment. EVAL™ resins are suitable when utilising the following fabrication techniques:
- monolayer film extrusion (blown or cast)
- multilayer film co-extrusion (blown or cast)
- sheet co-extrusion
- co-extrusion blow moulding
- pipe co-extrusion
- extrusion coating
- co-extrusion coating
- pipe co-extrusion coating
- co-injection moulding
- lamination

EVAL™ resins can be co-extruded with many types of polyolefins, polyamides, polystyrene and polyesters. Downstream processing such as thermoforming, vacuum and pressure moulding and printing can be normally done with film or sheet structures containing EVAL™ resins.

Thin coextruded barrier films using EVAL™ can be laminated to other substrates, adding barrier function to paper, carton and other renewable resources.

**Food safety**

**Food regulation compliance status of EVAL™ resins**
EVAL™ resins are in compliance with the EC Directive for food packaging and its transposition in the national regulations of the member states. EVAL™ resins have also been approved for use in direct food contact, indirect or multilayer food contact and for retort applications as outlined under the Food and Drug Administration regulations in the USA.
The widest range of grades

A variety of EVAL™ grades have been developed specifically for different methods of production and secondary processing. The perfect balance of required properties is achieved by using Kuraray technology to modify the ratio of ethylene to vinyl alcohol in the copolymer. The result is the widest available range of EVOH grades.

**EVAL™ M type**
has the lowest ethylene content available, and provides the highest barrier for automotive and flexible applications.

**EVAL™ L type**
has a very low ethylene content and is suitable as an ultra-high barrier grade in flexible, bottle and sheet applications.

**EVAL™ F type**
offers superior barrier performance with long-term run stability, and is widely used as the standard grade for flexible, automotive, bottle and tube applications. Specific versions exist for coating and pipe applications.

**EVAL™ T type**
was specially developed to obtain reliable layer distribution in thermoforming, and has become the industry standard for multilayer sheet and thermoformed flexible applications.

**EVAL™ J type**
offers thermoforming results even superior to those of T, and can be used for unusually deep-draw or sensitive sheet-based applications.

**EVAL™ C type**
can be used for high-speed co-extrusion coating and cast flexible applications.

**EVAL™ H type**
combines high-barrier properties and long-term run stability and thermoformability. The higher ethylene content allows easier processing and longer running times on older co-extrusion equipment, especially for blown flexible structures.

**EVAL™ E type**
has a higher ethylene content that allows for greater flexibility and even easier processing.

**EVAL™ G type**
has the highest ethylene content, making it the best candidate among standard EVAL™ grades for stretch and shrink film applications.

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**EVAL™ resin grades**

The following is an overview of EVAL™ resin grades with their typical properties and applications, distinguished by standard and special types:

### Table 1a: Standard grades

<table>
<thead>
<tr>
<th>Grade</th>
<th>Et. Cont. (mol%)</th>
<th>Density*1 (g/cm³)</th>
<th>MFR*2 (g/10min)</th>
<th>Tm (°C)</th>
<th>Tg*3 (°C)</th>
<th>OTR*4 (cm³.20µm/m².day.atm)</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>F101B</td>
<td>32</td>
<td>1.19</td>
<td>1.6</td>
<td>183</td>
<td>69</td>
<td>0.4</td>
<td>bottle, sheet, tube</td>
</tr>
<tr>
<td>F171B</td>
<td>32</td>
<td>1.19</td>
<td>1.8</td>
<td>183</td>
<td>57</td>
<td>0.4</td>
<td>bottle, film, tube</td>
</tr>
<tr>
<td>T101B</td>
<td>32</td>
<td>1.17</td>
<td>1.7</td>
<td>183</td>
<td>69</td>
<td>0.5</td>
<td>thermoforming, sheet, film</td>
</tr>
<tr>
<td>H171B</td>
<td>38</td>
<td>1.17</td>
<td>1.7</td>
<td>172</td>
<td>53</td>
<td>0.7</td>
<td>film, sheet</td>
</tr>
<tr>
<td>L105B</td>
<td>44</td>
<td>1.14</td>
<td>5.7</td>
<td>165</td>
<td>53</td>
<td>1.5</td>
<td>film, sheet</td>
</tr>
</tbody>
</table>

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### Table 1b: Specific versions of standard grades

<table>
<thead>
<tr>
<th>Grade</th>
<th>Et. Cont. (mol%)</th>
<th>Density*1 (g/cm³)</th>
<th>MFR*2 (g/10min)</th>
<th>Tm (°C)</th>
<th>Tg*3 (°C)</th>
<th>OTR*4 (cm³.20µm/m².day.atm)</th>
<th>Application</th>
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</thead>
<tbody>
<tr>
<td>F101A</td>
<td>32</td>
<td>1.19</td>
<td>1.6</td>
<td>183</td>
<td>69</td>
<td>0.4</td>
<td>F101 without outside lubricant</td>
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<tr>
<td>F104B</td>
<td>32</td>
<td>1.18</td>
<td>4.4</td>
<td>183</td>
<td>58</td>
<td>0.4</td>
<td>high MFR F-type</td>
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<tr>
<td>E171B</td>
<td>44</td>
<td>1.14</td>
<td>2.0</td>
<td>165</td>
<td>54</td>
<td>1.5</td>
<td>low MFR E-type</td>
</tr>
<tr>
<td>FP101B</td>
<td>32</td>
<td>1.19</td>
<td>1.6</td>
<td>183</td>
<td>69</td>
<td>0.4</td>
<td>pipe containing anti-oxidant</td>
</tr>
<tr>
<td>FP104B</td>
<td>32</td>
<td>1.18</td>
<td>4.4</td>
<td>183</td>
<td>58</td>
<td>0.4</td>
<td>pipe containing anti-oxidant</td>
</tr>
<tr>
<td>EP105B</td>
<td>44</td>
<td>1.14</td>
<td>5.7</td>
<td>165</td>
<td>53</td>
<td>1.5</td>
<td>pipe containing anti-oxidant</td>
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</tbody>
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### Table 1c: Special grades

<table>
<thead>
<tr>
<th>Grade</th>
<th>Et. Cont. (mol%)</th>
<th>Density*1 (g/cm³)</th>
<th>MFR*2 (g/10min)</th>
<th>Tm (°C)</th>
<th>Tg*3 (°C)</th>
<th>OTR*4 (cm³.20µm/m².day.atm)</th>
<th>Application</th>
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<tbody>
<tr>
<td>M100B</td>
<td>24</td>
<td>1.22</td>
<td>2.2*5</td>
<td>195</td>
<td>60</td>
<td>0.1</td>
<td>ultra high-barrier</td>
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<tr>
<td>L171B</td>
<td>27</td>
<td>1.20</td>
<td>4.2*5</td>
<td>191</td>
<td>60</td>
<td>0.2</td>
<td>high-barrier</td>
</tr>
<tr>
<td>T102B</td>
<td>32</td>
<td>1.17</td>
<td>2.0</td>
<td>183</td>
<td>69</td>
<td>0.6</td>
<td>deep thermoforming, sheet, film</td>
</tr>
<tr>
<td>E159B</td>
<td>35</td>
<td>1.17</td>
<td>9.3</td>
<td>177</td>
<td>53</td>
<td>0.6</td>
<td>extrusion coating</td>
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<td>G156B</td>
<td>38</td>
<td>1.17</td>
<td>9.3</td>
<td>160</td>
<td>50</td>
<td>3.2</td>
<td>oriented shrink film</td>
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### Table 1d: SP grades

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<th>Grade</th>
<th>Et. Cont. (mol%)</th>
<th>Density (g/cm³)</th>
<th>MFR (g/10min)</th>
<th>Tm (°C)</th>
<th>Tg*3 (°C)</th>
<th>OTR (cm³.20µm/m².day.atm)</th>
<th>Application</th>
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<tr>
<td>SP292B</td>
<td>44</td>
<td>1.13</td>
<td>2.1</td>
<td>161</td>
<td>68</td>
<td>3.1</td>
<td>lamination film</td>
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<tr>
<td>SP43A</td>
<td>32</td>
<td>1.18</td>
<td>6.6</td>
<td>181</td>
<td>55</td>
<td>0.6</td>
<td>shrink film, deep thermoforming</td>
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<tr>
<td>SP482B</td>
<td>32</td>
<td>1.16</td>
<td>2.0</td>
<td>181</td>
<td>41</td>
<td>0.6</td>
<td>shrink film, deep thermoforming</td>
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<tr>
<td>SP521B</td>
<td>27</td>
<td>1.19</td>
<td>4.0*5</td>
<td>187</td>
<td>40</td>
<td>0.3</td>
<td>high-barrier thermoforming</td>
</tr>
</tbody>
</table>

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Gas barrier properties of EVAL™

Amount of oxygen permeation through various polymers

**EVAL™ layer thickness and oxygen transmission rate**

<table>
<thead>
<tr>
<th>Thickness (µm)</th>
<th>27 mol% L171B</th>
<th>32 mol% F101B</th>
<th>38 mol% H171B</th>
<th>44 mol% E105B</th>
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</thead>
<tbody>
<tr>
<td>100</td>
<td>0.02</td>
<td>0.06</td>
<td>0.07</td>
<td>0.17</td>
</tr>
<tr>
<td>80</td>
<td>0.06</td>
<td>0.1</td>
<td>0.15</td>
<td>0.35</td>
</tr>
<tr>
<td>40</td>
<td>0.1</td>
<td>0.2</td>
<td>0.3</td>
<td>0.7</td>
</tr>
<tr>
<td>20</td>
<td>0.2</td>
<td>0.4</td>
<td>0.7</td>
<td>1.5</td>
</tr>
<tr>
<td>10</td>
<td>0.4</td>
<td>0.8</td>
<td>1.4</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>0.8</td>
<td>1.6</td>
<td>2.8</td>
<td>6</td>
</tr>
<tr>
<td>2.5</td>
<td>1.6</td>
<td>3.2</td>
<td>6.6</td>
<td>15</td>
</tr>
<tr>
<td>1.25</td>
<td>3</td>
<td>6.4</td>
<td>11.1</td>
<td>24</td>
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</table>

**Oxygen transmission rate of various polymers versus relative humidity at 20°C**

**Transmission rates of other gases at 0% RH**

<table>
<thead>
<tr>
<th>Film name</th>
<th>H2 (20°C)</th>
<th>N2 (25°C)</th>
<th>O2 (25°C)</th>
<th>CO2 (25°C)</th>
<th>He (25°C)</th>
<th>Ar (35°C)</th>
<th>Kr (35°C)</th>
<th>Ar (50°C)</th>
<th>Kr (50°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F101B</td>
<td>200</td>
<td>0.17</td>
<td>0.27</td>
<td>0.81</td>
<td>160</td>
<td>7</td>
<td>0.5</td>
<td>7</td>
<td>1.8</td>
</tr>
<tr>
<td>E105B</td>
<td>-</td>
<td>12</td>
<td>38</td>
<td>205</td>
<td>2000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CPA</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>60</td>
<td>150</td>
<td>23</td>
<td>68</td>
</tr>
<tr>
<td>OPET</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>OPP</td>
<td>10,000</td>
<td>7.3</td>
<td>3.4</td>
<td>9.100</td>
<td>-</td>
<td>8.100</td>
<td>28.000</td>
<td>6.900</td>
<td>23.000</td>
</tr>
<tr>
<td>LDPE</td>
<td>-</td>
<td>3.100</td>
<td>12.000</td>
<td>42.000</td>
<td>28.000</td>
<td>19.000</td>
<td>46.000</td>
<td>25.000</td>
<td>74.000</td>
</tr>
</tbody>
</table>

**Resistance of EVAL™ to various organic solvents**

<table>
<thead>
<tr>
<th>Solvent</th>
<th>SP value (kcal/m³)</th>
<th>Weight increase (wt%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xylene</td>
<td>8.8</td>
<td>0</td>
</tr>
<tr>
<td>Ethylacetate</td>
<td>9.1</td>
<td>0</td>
</tr>
<tr>
<td>Benzene</td>
<td>9.2</td>
<td>0</td>
</tr>
<tr>
<td>Acetone</td>
<td>9.9</td>
<td>0</td>
</tr>
<tr>
<td>Pyridine</td>
<td>10.7</td>
<td>0.5</td>
</tr>
<tr>
<td>Ethanol</td>
<td>12.7</td>
<td>1.5</td>
</tr>
<tr>
<td>Salad oil</td>
<td>2.5</td>
<td>0</td>
</tr>
</tbody>
</table>

**Relative humidity of EVAL™ layer in laminated structures**

**Liquid products**

**Dry products**
Examples of structures using EVAL™ EVOH barrier resins

**EVAL™ applied flexible**

**Typical applications**

- High-barrier laminate pouch/package
- Fresh red meat, fish, cheese
- High-barrier formable structures
- Fresh pasta, half-baked bread

**Typical structure (out/in)**

- PET/PE/tie/EVAL™/tie/EVA
- PET/PE/tie/EVAL™/tie/PE
- PA/PE/tie/EVAL™/tie/PE
- PA/EVAL™/PA/tie/PE
- PA/EVAL™/PA/tie/PA
- PA/PE/tie/EVAL™/PA/tie/PE

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**Examples of structures using EVAL™ EVOH barrier resins**

**EVAL™ applied flexible**

**Typical applications**

- Pouch, bag-in-box, overwrap
- Coffee
- Juice, wine, sauces, tomato paste
- Safety gloves
- Industrial films

**Typical structure (out/in)**

- PE/tie/EVAL™/tie/PE
- PET/PE/tie/EVAL™/tie/PE
- PE/tie/EVAL™/tie/EVA
- PE/EVAL™/PE
- PE/tie/EVAL™/tie/PE
## EVAL™ applied
### thermoforming

<table>
<thead>
<tr>
<th>Typical applications</th>
<th>Typical structure (out/in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Retortable food trays, sauces</td>
<td>- PP/regrind/tie/EVAL™/tie/PP</td>
</tr>
<tr>
<td>- Baby food, soup</td>
<td>- PP/regrind/tie/EVAL™/tie/regrind/PP</td>
</tr>
<tr>
<td>- Prepared meals, sauces, dairy</td>
<td>- PS/regrind/tie/EVAL™/tie/regrind/PE</td>
</tr>
<tr>
<td>- Coffee</td>
<td>- PET/PE/tie/EVAL™/tie/PE</td>
</tr>
<tr>
<td>- Petfood</td>
<td>- PS/tie/EVAL™/tie/PS</td>
</tr>
<tr>
<td>- Deep draw, transparent, SPPF</td>
<td>- PS/tie/EVAL™/tie/PE</td>
</tr>
<tr>
<td>- Beverage, fruit cup, meat trays</td>
<td>- PP/tie/EVAL™/tie/PP</td>
</tr>
<tr>
<td>- Charcuterie, meat, pizza dough</td>
<td>- PET/tie/EVAL™/tie/PE</td>
</tr>
</tbody>
</table>

### EVAL™ applied
### paper coating

<table>
<thead>
<tr>
<th>Typical applications</th>
<th>Typical structure (out/in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Juices, dairy products, green tea, wine</td>
<td>- PE/paper/PE/tie/EVAL™/tie/PE</td>
</tr>
<tr>
<td>- Soups</td>
<td>- PE/paper/EVAL™/tie/PE</td>
</tr>
<tr>
<td>- Chocolate, dried foods like spices, coffee, tea</td>
<td>- Paper/PE/tie/EVAL™/tie/PE</td>
</tr>
<tr>
<td>- Cereal packages without an additional inner bag</td>
<td>- PP/paper/PP/tie/EVAL™/tie/alu/PE</td>
</tr>
</tbody>
</table>
**EVAL™ applied bottles**

**Typical applications**
- Ketchup bottles, sauce bottles
- Juice and milk bottles, ground coffee, snacks
- Beer, carbonated beverages
- Chemical packaging bottles
- Cosmetic bottles

**Typical structure (out/in)**
- PP/tie/EVAL™/tie/regrind/PP
  - PE/tie/EVAL™/tie/regrind/PE
  - PET/EVAL™/PET
- PE/tie/EVAL™/tie/regrind/PE
- PET/EVAL™/PET/EVAL™/PET
- PET/EVAL™/PET
- PE/tie/EVAL™
  - PE/regrind/tie/EVAL™
  - PE/tie/EVAL™/tie/regrind/PE
  - EVAL™/tie/regrind/PE

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**EVAL™ applied tube**

**Typical applications**
- Toothpaste
- Cosmetic Products
- High gloss, printable and anti-static outer surface

**Typical structure (out/in)**
- PE/tie/EVAL™/tie/PE
- PP/tie/EVAL™/tie/PE
- EVAL™/tie/regrind/PP
### EVAL™ applied pipe

**Typical applications**
- Under-floor heating pipes
- Wall heating and cooling
- Radiator heating pipe
- External staircases
- Plumbing (sanitary)
- Gas pipe
- Open-air snow and ice-free heating
- District heating pipe

**Typical structure (out/in)**
- EVAL™/tie/PEX
- EVAL™/tie/PP
- PEX/tie/EVAL™/tie/PEX
- PE-RT/tie/EVAL™/tie/PE-RT
- PB/tie/EVAL™/tie/PB
- EVAL™/tie/PEX
- outer jacket/insulation foam/EVAL™/tie/PEX
- outer jacket/insulation foam/EVAL™/tie/PB

### EVAL™ applied automotive

**Typical applications**
- Fuel tanks (automotive)
- Small-engine gas tanks (lawn mower, chain saw, motor vehicles)
- Fuel lines
- Fuel filler pipes
- Underground fuel pipes

**Typical structure (out/in)**
- HDPE + masterbatch/regrind/tie/EVAL™/tie/HDPE
- PA12/tie/PA6/EVAL™/PA6
- PA12/tie/EVAL™/PA6
- HDPE + masterbatch/regrind/tie/EVAL™/tie/HDPE
- HDPE/tie/EVAL™
- HDPE/tie/EVAL™/(Cond HDPE)
EVAL™, protecting so much more than your product

As the impact we create on our environment becomes an ever greater concern, the world continues to look for solutions that are truly sustainable. EVAL™ EVOH resins can help, providing valuable function while conserving resources, improving efficiency and avoiding waste, often throughout the entire life cycle of the product.

Adding function to food packaging
A one millimetre thickness of EVAL™ EVOH has about the same gas barrier properties as ten metres of LDPE. With such high performance, EVAL™ layers of only a few microns can add real function to multilayer structures. Barrier performance previously only available from metal or glass can thus be added to lighter weight structures based on other recyclable and energy recoverable plastics, or renewable resources like PLA and paperboard.

Protecting quality and value
EVAL™ add real function to food packaging by keeping oxygen, odours and MOSH/MOAH mineral oils out to avoid spoilage, while locking flavour, aroma and atmosphere inside where they belong. This protects food quality and value, and prolongs shelf life without artificial additives. Food arrives to the consumer in a safe and convenient package, fresh and intact. EVAL™'s barrier properties help use fewer resources for the same packaging function. Optimized portion size, lighter weight and extended freshness help improve the efficiency of storage, transport and display, saving costs and preserving resources.

Efficient energy use
EVAL™ helps maintain the efficiency of insulation and heating systems, saving money and resources by extending their working life. EVAL™ barrier is effective against new fuels, and blocks emissions from light weight plastic tank and line systems.

Recyclable and recoverable
EVAL™ EVOH is recyclable, and is commonly used in regrind structural layers rigid food packaging such as bottles, cups and trays. It can also be used for post-consumer recycling, and will not disrupt polyolefin or PET recycling streams.

EVAL™ has excellent and safe energy recovery properties, often reducing the amount of extra fuel necessary for energy generation from the thermal disposal of sorted waste. Under perfect combustion, the few microns of EVAL™ in a package emit only small amounts of CO₂ and water vapour.

In addition to ISO 9001:2000, EVAL Europe nv is compliant with ISO 14001:2004 and ISO/TS16946 standards.

Learn how EVAL™ can help you save costs and reduce impact on the environment at www.evalevoh.com

“The best way to reduce impact on the environment is to minimise product and packaging waste. With EVAL™, savings are generated by reducing the amount of packaging, without compromising on its protective function.”
EVAL™ the world’s leading EVOH

Europe
EVAL Europe nv (Antwerp, Belgium)
Capacity: 24,000 tons/year
Europe’s first and largest EVOH production facility

Americas
Kuraray America Inc. (Houston, Texas, USA)
Capacity: 35,000 tons/year
The world’s largest EVOH production facility

Asia-Pacific
Kuraray Co. Ltd. (Okayama, Japan)
Capacity: 10,000 tons/year
The world’s first EVOH production facility

NOTICE
The information, specifications, procedures, methods and recommendations herein are presented in good faith, are believed to be accurate and reliable, but may well be incomplete and/or not applicable to all conditions or situations that may exist or occur. No representation, guarantee or warranty is made as to the completeness of said information, specifications, procedures, methods and recommendations or that the application or use of any of the same will avoid hazards, accidents, losses, damages or injury of any kind to persons or property or that the same will not infringe patents of others or give desired results. Readers are cautioned to satisfy themselves as to the suitability of said information, specifications, procedures, methods and recommendations for the purpose intended prior to use.

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EVAL™ resins are produced worldwide under unified Kuraray product and quality specifications.