



# 武汉亿科德精细化工有限公司 ECOD SPECIALTIES(WUHAN) CO.,LTD.

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## Company Introduction

\*Founded in Sep., 2011.

\*Plant coverage: 64000 sqm.

\*Total capacity: 10000mt/year.

\*A leading Benzoic ester plasticizers producer in China, focusing on commercial production and custom manufacturing of Benzoic esters and other kinds of esters.

\*Engaged in research, production, sale and service related to environmentally friendly Benzoic ester plasticizers such as Dipropylene Glycol Dibenoate (DPGDB), Diethylene Glycol Dibenoate (DEGDB) and their blends.

\*Applications as below.

| Applications                            | Recommended Products |
|---|----------------------|
| Water-born adhesives                    | ECOD-FLEX 342/50/80  |
| Hot-melt adhesives                      | ECOD-FLEX 342/80     |
| PS sealants                             | ECOD-FLEX PS80       |
| PU sealants                             | ECOD-FLEX 342        |
| Caulks                                  | ECOD-FLEX 50         |
| Coating film former(acrylic acid)       | ECOD-FLEX 80         |
| Coating film former(PU)                 | ECOD-FLEX 342        |
| Coating film former(epoxy resin)        | ECOD-FLEX 342        |
| Inks                                    | ECOD-FLEX 342        |
| PVC plastisol                           | ECOD-FLEX 342/314    |
| PVC resilient flooring                  | ECOD-FLEX 342/80     |
| PVC coated products                     | ECOD-FLEX 342/314    |
| PVC coated cloth                        | ECOD-FLEX 80/314     |
| Artificial leather                      | ECOD-FLEX 80         |
| Pesticide/glow stick carriers           | ECOD-FLEX 342        |
| PU rollers/elastomer/prepolymer         | ECOD-FLEX 342/342S   |
| Textile auxiliary agent(leveling agent) | ECOD-FLEX CA314/290  |



# Product Data Sheet

## ECOD-FLEX 342

(DIPROPYLENE GLYCOL DIBENZOATE)

CAS NO. 27138-31-4

ECOD-FLEX 342 is a high solvating Dibenzoate plasticizer. Its main component is DIPROPYLENE GLYCOL DIBENZOATE. As a replacement for phthalate plasticizers recommended by the European Chemical Agency(ECHA), it has been used for many years in a wide variety of applications, including adhesives, PS sealants, caulks, resilient flooring, PVC, artificial leather cloth, PVC coated cloth, paints, inks, pesticides, etc..

### **Specification**

Appearance: transparent oily liquid, free of particulate impurities.

Assay(Benzoic esters): 99.0% min.

Acidity(calculated as Benzoic Acid): 0.1% max.

Color(APHA): 80 max.

Moisture: 0.1% max.

Hydroxyl No.: 13 max.

### **Typical Properties**

#### **Solubility**

In water: < 0.01%

Water in: < 0.25%

Molecular Weight

342

Boiling Point(5mmHg, °C)

230

Freezing Point(°C)

-30

Pour Point(°C)

-19

Flash Point(TCC, °C)

>150

Refractive Index(25°C)

1.5282

Specific Gravity(25°C)

1.120-1.125

Viscosity(Brookfield, 25°C)

120 cps

VOC Content:

<3%

Odor

Mild ester-like

### **Outstanding Advantages**

1. Environmentally friendly plasticizers recommended by the European Chemical Agency(ECHA) in May 2009. Does not contain any phthalates and can be used as primary plasticizers. Data from more than 30 years applications and tests show Dibenzoate esters are low in toxicity, non-mutagenic, non-carcinogenic and easy to degrade.
2. High solvating and lower fusing point which means faster processing speed. Very good foaming effect in PVC foaming process.
3. High plasticizing efficiency. More fillers can be added. In some formulations there is an apparent decrease of plasticizer volume.
4. Compatible with compounds like PVC, EVA, etc.. Products containing ECOD-FLEX 342 exhibit excellent stain and extraction resistance. Soft under low temperature. Impervious to light and heat. Low VOC content.

Package: 225kg iron drums.

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# Product Data Sheet

## ECOD-FLEX 342S (DIPROPYLENE GLYCOL DIBENZOATE) CAS NO. 27138-31-4

ECOD-FLEX 342S is a high solvating Dibenzate plasticizer. Its main component is DIPROPYLENE GLYCOL DIBENZOATE. Due to excellent compatibility and efficiency, it has been widely used as an environmentally friendly plasticizer for many years in 2K polyurethane systems where it can contribute improved tear strength, better rebound and reduce swell with certain solvents.

### Specification

Appearance: transparent oily liquid, free of particulate impurities.

Assay(Benzoic esters): 98.0% min.

Acidity(calculated as Benzoic Acid): 0.1% max.

Color(APHA): 100 max.

Moisture: 0.07% max.

Hydroxyl No.: 6 max.

### Typical Properties

#### Solubility

In water: < 0.01%

Water in: < 0.25%

Molecular Weight

342

Boiling Point(5mmHg, °C)

230

Freezing Point(°C)

-30

Pour Point(°C)

-19

Flash Point(TCC, °C)

> 150

Refractive Index(25°C)

1.5285

Specific Gravity(25°C)

1.12-1.13

Viscosity(Brookfield, 25°C)

120 cps

VOC Content:

< 3%

Odor

Mild ester-like

### Outstanding Advantages

1. Environmentally friendly plasticizers recommended by the European Chemical Agency(ECHA) in May 2009. Does not contain any phthalates and can be used as primary plasticizers. data from more than 30 years applications and tests show Dibenzate esters are low in toxicity, non-mutagenic, non-carcinogenic and easy to degrade.
2. High solvating and excellent compatibility in polyurethane systems. Products containing ECOD-FLEX 342S exhibit excellent stain and extraction resistance. Soft under low temperature. Impervious to light and heat. Low VOC.
3. Low hydroxyl No. and low moisture. Excellent plasticizing efficiency in PU systems.

Package: 225kg iron drums.

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# Product Data Sheet

## ECOD-FLEX 314

( DIETHYLENE GLYCOL DIBENZOATE)

CAS NO.: 120-55-8

ECOD-FLEX 314 is a high solvating Dibenzoate plasticizer. Its main component is DIETHYLENE GLYCOL DIBENZOATE. As a replacement for phthalate plasticizers recommended by the European Chemical Agency(ECHA), it has been used for many years in a wide variety of applications, including adhesives, PS sealants, resilient flooring, PVC, artificial leather cloth, PVC coated cloth, etc..

### **Specification**

Appearance: transparent oily liquid, free of particulate impurities.

Assay(Benzoic esters): 99.0% min.

Acidity(calculated as Benzoic Acid): 0.1% max.

Color(APHA): 80 max.

Moisture: 0.1% max.

Hydroxyl No.: 13 max.

### **Typical Properties**

|                             |                 |
|-----------------------------|-----------------|
| Molecular Weight            | 314             |
| Boiling Point(5mmHg, °C)    | 240             |
| Freezing Point(°C)          | 16              |
| Flash Point(TCC, °C)        | >150            |
| Refractive Index(25°C)      | 1.5428          |
| Specific Gravity(25°C)      | 1.17-1.18       |
| Viscosity(Brookfield, 25°C) | 75 cps          |
| VOC Content                 | <2.5%           |
| Odor                        | Mild ester-like |

### **Outstanding Advantages**

1. Environmentally friendly plasticizers recommended by the European Chemical Agency(ECHA) in May 2009. Does not contain any phthalates and can be used as primary plasticizers. Data from more than 30 years applications and tests show Dibenzoate esters are low in toxicity, non-mutagenic, non-carcinogenic and easy to degrade.
2. High solvating and lower fusing point. Compared with DOP, ECOD-FLEX 314 requires a lower processing temperature so that the processing speed is faster. Products containing ECOD-FLEX 314 exhibit excellent stain and extraction resistance. Soft under low temperature. Impervious to light and heat.
3. Compatible with polyvinyl acetate emulsions and copolymer emulsions. Very good plasticizing effect in water-borne adhesives. Low VOC content.

Package: 225kg iron drums.

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# Product Data Sheet

## ECOD-FLEX 50

ECOD-FLEX 50 is a most widely used Benzoic ester plasticizers in adhesives. Its main component is DIPROPYLENE GLYCOL DIBENZOATE(CAS NO.:27138-31-4) and DIETHYLENE GLYCOL DIBENZOATE(CAS NO.:120-55-8). As a replacement for phthalate plasticizers recommended by the European Chemical Agency(ECHA), it has been used for many years in a wide variety of applications, including adhesives, caulks, hot melt adhesives, PS sealants, PVC resilient flooring, paints, etc..

### **Specification**

Appearance: transparent oily liquid, free of particulate impurities.

Assay(Benzoic esters): 99.0% min.

Acidity(calculated as Benzoic Acid): 0.1% max.

Color(APHA): 80 max.

Moisture: 0.1% max.

Hydroxyl No.: 13 max.

### **Typical Properties**

|                             |                 |
|-----------------------------|-----------------|
| Molecular Weight(typical)   | 327             |
| Boiling Point(5mmHg, °C)    | 235             |
| Freezing Point(°C)          | 0               |
| Pour Point(°C)              | -20             |
| Flash Point(TCC, °C)        | >149            |
| Refractive Index(25 °C)     | 1.536           |
| Specific Gravity(25 °C)     | 1.14-1.15       |
| Viscosity(Brookfield,25 °C) | 80 cps          |
| VOC Content                 | <3%             |
| Odor                        | Mild ester-like |

### **Outstanding Advantages**

1. Environmentally friendly plasticizers recommended by the European Chemical Agency(ECHA) in May 2009. Does not contain any phthalates and can be used as primary plasticizers. Data from more than 30 years applications and tests show Dibenzate esters are low in toxicity, non-mutagenic, non-carcinogenic and easy to degrade.
2. High solvating and lower fusing point which means faster processing speed. Very good foaming effect in PVC foaming process.
3. Very good plasticizing efficiency. More fillers can be added. In some formulations there is an apparent decrease of plasticizer volume.
4. Compatible with compounds like PVC, EVA, etc.. Very good plasticizing effect in EVA adhesives, water-borne adhesives, acrylics, caulks, etc..
5. PVC products containing ECOD-FLEX 50 exhibit excellent stain and extraction resistance to aliphatic solvents.

Package: 225kg iron drums.

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# Product Data Sheet

## ECOD-FLEX 80

ECOD-FLEX 80 is a high solvating Dibenzoate plasticizer. It has been widely used in adhesive industry. Its main component is DIPROPYLENE GLYCOL DIBENZOATE (CAS NO.:27138-31-4) and DIETHYLENE GLYCOL DIBENZOATE (CAS NO.:120-55-8). As a replacement for phthalate plasticizers recommended by the European Chemical Agency (ECHA), it has been used for many years in a wide variety of applications, including latex adhesives, caulk, PS sealants, PVC resilient flooring, paints and coatings (as coalescents), etc..

### **Specification**

Appearance: transparent oily liquid, free of particulate impurities.

Assay (Benzoic esters): 99.0% min.

Acidity (calculated as Benzoic Acid): 0.1% max.

Color (APHA): 80 max.

Moisture: 0.1% max.

Hydroxyl No.: 13 max.

### **Typical Properties**

|                              |                 |
|------------------------------|-----------------|
| Molecular Weight (typical)   | 320             |
| Boiling Point (5mmHg, °C)    | 238             |
| Freezing Point (°C)          | <16             |
| Pour Point (°C)              | -40             |
| Flash Point (TCC, °C)        | >149            |
| Refractive Index (25°C)      | 1.535           |
| Specific Gravity (25°C)      | 1.14-1.15       |
| Viscosity (Brookfield, 25°C) | 90 cps          |
| Surface Tension (25°C)       | 43.0            |
| Odor                         | Mild ester-like |
| Solubility                   |                 |
| In water: 0.42%              |                 |
| Water in: 1.35%              |                 |

### **Outstanding Advantages**

1. Environmentally friendly plasticizers recommended by the European Chemical Agency (ECHA) in May 2009. Does not contain any phthalates and can be used as primary plasticizers. Data from more than 30 years applications and tests show Dibenzoate esters are low in toxicity, non-mutagenic, non-carcinogenic and easy to degrade.
2. High solvating and lower fusing point which means faster processing speed. Very good foaming effect in PVC foaming process.
3. Compatible with EVA emulsions, polysulfur rubbers and PVC. A good combination of cost and performance in water-borne adhesives industry, polysulfur sealants industry and PVC resilient flooring industry.

Package: 225kg iron drums.



# Product Data Sheet

## ECOD-FLEX CA80

ECOD-FLEX CA80 is a high solvating Dibenzoate plasticizer. It has been widely used in adhesive industry. Its main component is DIPROPYLENE GLYCOL DIBENZOATE (CAS NO.:27138-31-4) and DIETHYLENE GLYCOL DIBENZOATE (CAS NO.:120-55-8). As a replacement for phthalate plasticizers recommended by the European Chemical Agency (ECHA), it has been used for many years in a wide variety of applications, including latex adhesives, caulk, paints and coatings (as coalescents).

### **Specification**

Appearance: transparent oily liquid, free of particulate impurities.

Assay (Benzoic esters): 98.0% min.

Acidity (calculated as Benzoic Acid): 1.0% max.

Color (APHA): 80 max.

Moisture: 0.1% max.

### **Typical Properties**

|                              |                 |
|------------------------------|-----------------|
| Molecular Weight (typical)   | 320             |
| Boiling Point (5mmHg, °C)    | 238             |
| Freezing Point (°C)          | <16             |
| Pour Point (°C)              | -40             |
| Flash Point (TCC, °C)        | >149            |
| Refractive Index (25°C)      | 1.535           |
| Specific Gravity (25°C)      | 1.14-1.15       |
| Viscosity (Brookfield, 25°C) | 90 cps          |
| Surface Tension (25°C)       | 43.0            |
| Odor                         | Mild ester-like |
| Solubility                   |                 |
| In water: 0.42%              |                 |
| Water in: 1.35%              |                 |

### **Outstanding Advantages**

1. Environmentally friendly plasticizers recommended by the European Chemical Agency (ECHA) in May 2009. Does not contain any phthalates and can be used as primary plasticizers. Data from more than 30 years applications and tests show Dibenzoate esters are low in toxicity, non-mutagenic, non-carcinogenic and easy to degrade.
2. Compatible with different kinds of emulsions and a good combination of cost and performance in water-borne adhesive industry.
3. Lower Tg temperature and good viscosity response.
4. Shorten set time and prolong open time.
5. Better wet tack and low VOC.

Package: 225kg iron drums or 1100kg IBC.

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# Product Data Sheet

## ECOD-FLEX CA314

(DIETHYLENE GLYCOL DIBENZOATE)

CAS NO.:120-55-8

ECOD-FLEX CA314 is a high solvating Dibenzoate plasticizer. Its main component is DIETHYLENE GLYCOL DIBENZOATE. As a replacement for phthalate plasticizers recommended by the European Chemical Agency(ECHA), it has been used for many years in a wide variety of applications, including adhesives, caulk, etc.. As a good solvent with high boiling point, low VOC, mild odor and low residue odor after fabrics' dying process, it also has been widely used as a replacement for Benzyl Benzoate in dyestuff carriers, leveling agents, repairing agents, etc.. Furthermore, it is not listed as a sensitive fragrance.

### Specification

Appearance: transparent oily liquid, free of particulate impurities.

Assay(Benzoic esters): 98.0% min.

Acidity(calculated as Benzoic Acid): 1.0% max.

Color(APHA): 80 max.

Moisture: 0.1% max.

### Typical Properties

|                             |                 |
|-----------------------------|-----------------|
| Molecular Weight            | 314             |
| Boiling Point(5mmHg, °C)    | 240             |
| Freezing Point(°C)          | <16             |
| Flash Point(TCC, °C)        | >150            |
| Refractive Index(25°C)      | 1.5428          |
| Specific Gravity(25°C)      | 1.17-1.18       |
| Viscosity(Brookfield, 25°C) | 60 cps          |
| VOC Content                 | <2.5%           |
| Odor                        | Mild ester-like |

### Outstanding Advantages

1. Environmentally friendly plasticizers recommended by the European Chemical Agency(ECHA) in May 2009. Does not contain any phthalates and can be used as primary plasticizers. Data from more than 30 years applications and tests show Dibenzoate esters are low in toxicity, non-mutagenic, non-carcinogenic and easy to degrade.
2. Compatible with polyvinyl acetate emulsions and copolymer emulsions. Very good plasticizing effect in water-borne adhesives. Low VOC content.
3. Better color, better odor and low residue odor after fabrics' dying process compared with Benzyl Benzoate.

Package: 225kgs/ plastic drums or 1100kg/IBC.



# Product Data Sheet

## ECOD-FLEX 332

ECOD-FLEX 332 is a three-components high solvating Dibenzoate plasticizer. It has been widely used in PVC resilient flooring(as a fast fuser, delivering low processing temperature), polyvinyl acetate and water-based adhesives (extend open time and reduce set time), acrylic latex caulk (improve adhesion), polysulfide sealants, paints and coatings, pressure-sensitive adhesives, etc..

### Specification

Appearance: transparent oily liquid, free of particulate impurities.

Assay(Benzoic esters): 98.0% min.

Acidity(calculated as Benzoic Acid): 0.1% max.

Color(APHA): 40 max.

Moisture: 0.1% max.

Hydroxyl No.: 8 max.

### Typical Properties

|                            |                 |
|----------------------------|-----------------|
| Molecular Weight(typical)  | 332             |
| Boiling Point              | 354             |
| Freezing Point(°C)         | <16             |
| Pour Point(°C)             | -25             |
| Flash Point(TCC, °C)       | 202             |
| Refractive Index(25°C)     | 1.539           |
| Specific Gravity(25°C)     | 1.15-1.16       |
| Viscosity(Brookfield,25°C) | 72 cps          |
| Odor                       | Mild ester-like |

### Outstanding Advantages

1. Environmentally friendly plasticizers recommended by the European Chemical Agency(ECHA) in May 2009. Does not contain any phthalates and can be used as primary plasticizers. Data from more than 30 years applications and tests show Dibenzoate esters are low in toxicity, non-mutagenic, non-carcinogenic and easy to degrade.
2. High solvating and lower fusing point which means faster processing speed. Very good foaming effect in PVC foaming process.
3. Good compatibility with PVC and EVA polymers. In polyvinyl acetate, water-based adhesives and acrylic latex caulk industry, as a viscosity adjuster it can extend open time, reduce set time, improve tenacity and decrease film-forming temperature of emulsions.
4. PVC formulations containing Ecod-flex 332 have exhibited exceptional stain resistance and resistance to fatty ester solvents.

Package: 225kg iron drums or 1100kg IBC.



# Product Data Sheet

## ECOD-FLEX 290

(DIBENZOATE ESTERS)

ECOD-FLEX 290 is a high solvating Dibenzoate plasticizer with exceptional stain resistance performance which makes it ideal for resilient polyvinyl chloride(PVC) flooring(topcoats).It also can make acrylic plastisol used in car primers easily colloidized and fused so it is widely used in acrylic primers in car industry,decoration paints,acrylic sealants and textile inks for T-shirt,etc..

### Specification

Appearance:transparent oily liquid,free of particulate impurities.

Viscosity(mPa.s,25°C):70-100

Color(APHA):100 max.

Heating Loss:0.5% max.

Acidity(mgKOH/g):0.5% max.

Moisture:0.15% max.

Hydroxyl No.(mgKOH/g):15 max.

### Typical Properties

|                            |                 |
|----------------------------|-----------------|
| Molecular Weight           | 290             |
| Boiling Point(5mmHg, °C)   | > 300           |
| Freezing Point(°C)         | < -3            |
| Pour Point(°C)             | -17             |
| Flash Point(SETAFLASH, °C) | ≈190            |
| Refractive Index(25°C)     | 1.535           |
| Specific Gravity(25°C)     | 1.14-1.15       |
| Viscosity(Brookfield,25°C) | 80 cps          |
| Odor                       | Mild ester-like |

### Outstanding Advantages

1. Environmentally friendly plasticizers recommended by the European Chemical Agency(ECHA) in May 2009.Does not contain any phthalates and can be used as primary plasticizers.Data from more than 30 years applications and tests show Dibenzoate esters are low in toxicity,non-mutagenic,non-carcinogenic and easy to degrade.
2. High solvating and lower fusing point which means faster processing speed.
3. Exceptional stain resistance performance and perfect foaming performance in PVC foaming process.High plasticizing efficiency.
4. Good compatibility with Acrylic resins and good storage stability(acrylic plastisol). It can improve storage stability,softness,plasticization and impact resistance of acrylic primers and physical properties of acrylic resins after colloidization and fusion.

Package:225kg iron drums or IBC.



# Product Data Sheet

## ECOD-FLEX 800

**ECOD-FLEX 800** is a versatile, high-solubility benzoate plasticizer with broad compatibility in polymers, particularly exhibiting excellent compatibility with polyurethanes (TPU/CPU). Featuring light color, low odor, and low hydroxyl value, this product minimizes reactivity in formulations for superior ease of use. It is primarily designed for applications requiring high transparency, such as PU footwear, smart wearable devices, fire hoses, printing rollers, printing blades, etc.

### Specification

|                            |  |
|----------------------------|--|
| Appearance:                | Clear oily liquid, free of mechanical impurities |
| Content (benzoate esters): | ≥99.0%   |
| Acidity (as benzoic acid): | ≤0.1%  |
| Color (APHA):              | ≤40  |
| Moisture:                  | ≤0.1%  |
| Hydroxyl value:            | ≤6   |

### Typical Properties

|                            |                 |
|----------------------------|-----------------|
| Molecular Weight(typical)  | 307             |
| Color (APHA):              | 20              |
| Flash Point(TCC, °C)       | 210             |
| Refractive Index(25°C)     | 1.5440          |
| Specific Gravity(25°C)     | 1.168           |
| Viscosity(Brookfield,25°C) | 85 cps          |
| Odor                       | Mild ester-like |

### Outstanding Advantages

1. High plasticizing efficiency with superior compatibility in TPU/CPU systems.
2. Low color index ensures outstanding clarity in finished products.
3. Low hydroxyl value minimizes unintended reactions in formulations.
4. Milder odor compared to conventional benzoate plasticizers.

Package: 225kg iron drums/ 1100kg IBC tanks

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