

# Einar® 601

## Anti-static additive for PE, EVA, PLA, PA and PVC



### PRODUCT NAME

Einar® 601

### ANTI-STAT FOR:

- LDPE, LLDPE, and HDPE films
- LDPE, LLDPE, HDPE injection moulded parts
- PE and EVA foams
- PLA
- PA
- Flexible and rigid PVC

# The powerful plant-based, food-grade solution for all PE, EVA, PLA, PA and PVC grades

Einar® 601 is a plant-based, food-grade anti-static additive specifically formulated for LDPE, LLDPE, HDPE, EVA, PLA, PA and PVC. It offers exceptional performance in demanding applications, surpassing standard migratory additives. This long-lasting additive not only ensures optimal functionality but also meets stringent safety standards for food contact.

This advanced polyglycerol ester is particularly suitable for challenging applications like food and electronics packaging, as well as thin-walled parts.

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## KEY FEATURES

- ✓ Highly effective replacement for anti-static ethoxylated amines and amides
- ✓ A custom-designed polyglycerol ester made from fatty acids, all of vegetable origin
- ✓ An internal anti-static additive for additive masterbatches
- ✓ Worldwide regulatory approval for food-contact applications
- ✓ Available in paste form

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## KEY BENEFITS

- ✓ Can be used for PE, EVA, PLA, PA and PVC grades by adjusting the dosage level
- ✓ Prevents dust attraction to plastic articles and enables clean and dust-free packaging in production and final application
- ✓ Facilitates static dissipation during filling and loading of plastic packaging
- ✓ No stress-cracking of polycarbonate
- ✓ No adverse effects on mechanical, optical, and barrier properties
- ✓ No worries when used in food-grade applications
- ✓ Consultancy and technical evaluations available from our applications team

**Einar® 601 for PE anti-stat film applications**

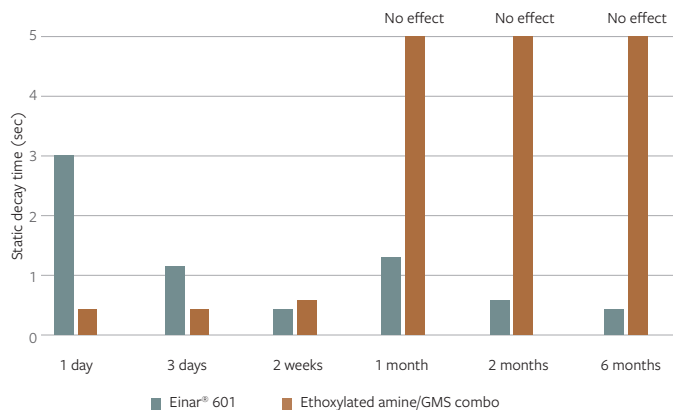
**Einar® 601** offers excellent performance in a very broad range of PE applications. In most LDPE and LLDPE films it will provide a good and sufficient performance at low loading levels. In LDPE and LLDPE films the recommended loading level is 0.1 - 0.4%. In HDPE, a highly crystalline material where anti-stat migration is low, anti-stat concentrations need to be higher and the recommended loading level is 0.3 - 0.6%.

In coextruded or laminated packaging films, the anti-stat is often added to a very thin section of the entire film and therefore, the anti-stat must be a very reliable and efficient performer. **Einar® 601** will deliver the performance you need and has proven to deliver excellent performance when used in the thinner film sections of a sealing layer such as metallocene LLDPE.



**ANTI-STAT PERFORMANCE IN HDPE BLOWN FILM**

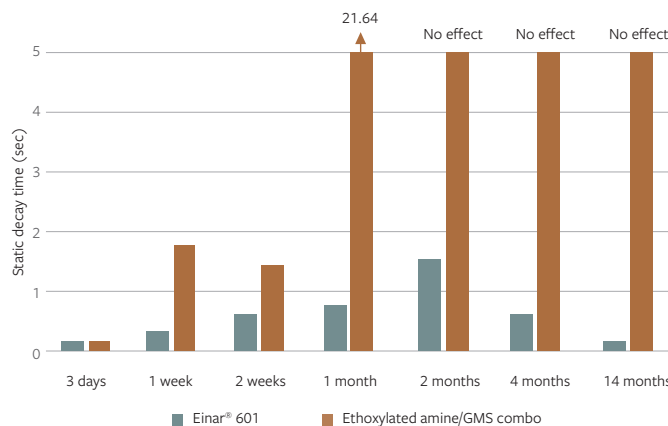
Additive concentration is 0.6%, measured at 50% RH.



*Einar® 601 is an excellent performer in HDPE film with both immediate and long-term performance*

**ANTI-STAT PERFORMANCE IN LDPE BLOWN FILM**

Additive concentration is 0.1%, measured at 50% RH.



*Einar® 601 is also an excellent performer in LDPE film with both immediate and long-term performance*

## **Einar® 601 for PE anti-stat injection moulding applications**

**Einar® 601** offers excellent performance in a very broad range of PE injection moulding applications. In most LDPE and LLDPE it will provide a good and sufficient performance at low loading levels.

In HDPE, a highly crystalline material where anti-stat migration is low, anti-stat concentrations need to be in the higher end of the recommended 0.5 – 1.0% loading level.

**Einar® 601** will deliver the performance you need and has proven to deliver excellent performance when used in the thin-walled parts.

Additionally, **Einar® 601** acts as a processing aid, meaning better mould release and denesting of injection moulded parts.



**Enhanced performance in low humidity**

**Einar® 601** is a high-performing anti-stat agent also in low humidity conditions. It provides consistent static control, reducing the risks of electrostatic discharge damage to sensitive electronic components.

**Reduced oiliness of packaging films**

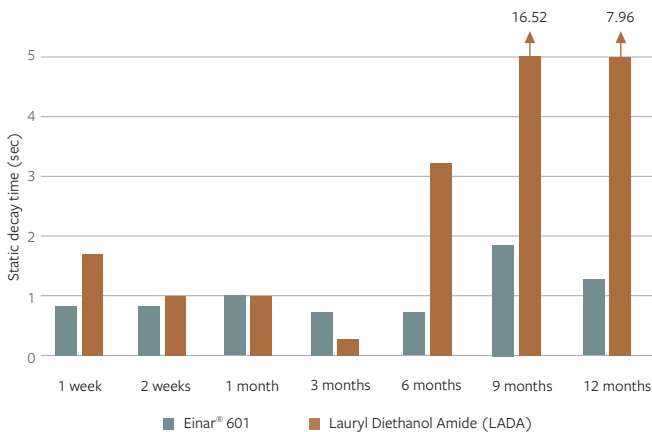
Conventional amide-based anti-static additives may leave an oily residue on the packaging film, making it difficult to handle and potentially contaminating the electronic components.

**Einar® 601**, on the other hand, produces less oiliness even at the same typical dosage, improving manufacturing efficiency and product quality by keeping the film clean and easy to handle. By making the switch to **Einar® 601**, manufacturers can achieve improved performance, prevent stress-cracking in polycarbonate, minimize oiliness, and reduce costs in their electronics packaging, particularly in low-humidity conditions.



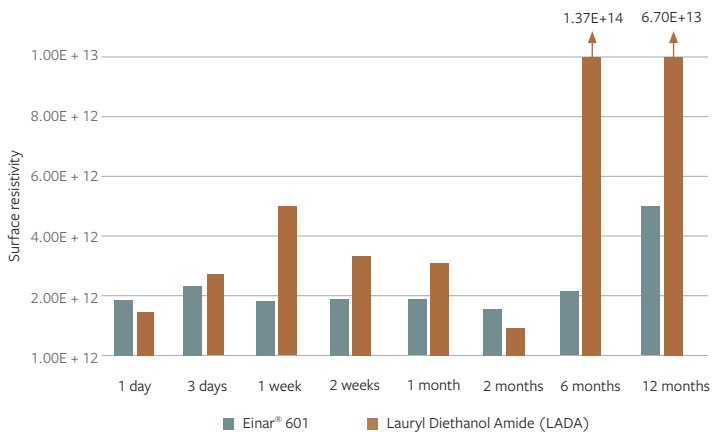
**ANTI-STAT PERFORMANCE IN LDPE BLOWN FILM**

Additive concentration is 0.3%, measured at 12% RH.



**SURFACE RESISTIVITY IN LDPE BLOWN FILM**

Additive concentration is 0.3%, measured at 12% RH.



**Einar® 601 for anti-stat applications in PE and EVA foams**

The use of efficient anti-stats in PE and EVA foam is particularly important in the packaging of sensitive electronics, where static build-up may result in electrostatic discharge that will be detrimental to circuit boards and other electronic components.

**Einar® 601** is a proven performer, delivering excellent anti-stat protection to PE and EVA foams, even at low humidity conditions. Recommended loading levels for PE are 0.2 - 0.5% for most applications. For EVA foam, the recommended loading levels are 0.5 - 1.5%.

**Einar® 601** has no adverse effect on foam stability. The product is 100% free from amines and amides and will not interfere with ageing modifiers such as **Einar® 201**. Due to its chemistry there are no issues with stress cracking of polycarbonate when packaging materials are in direct contact with packaged electronic components.

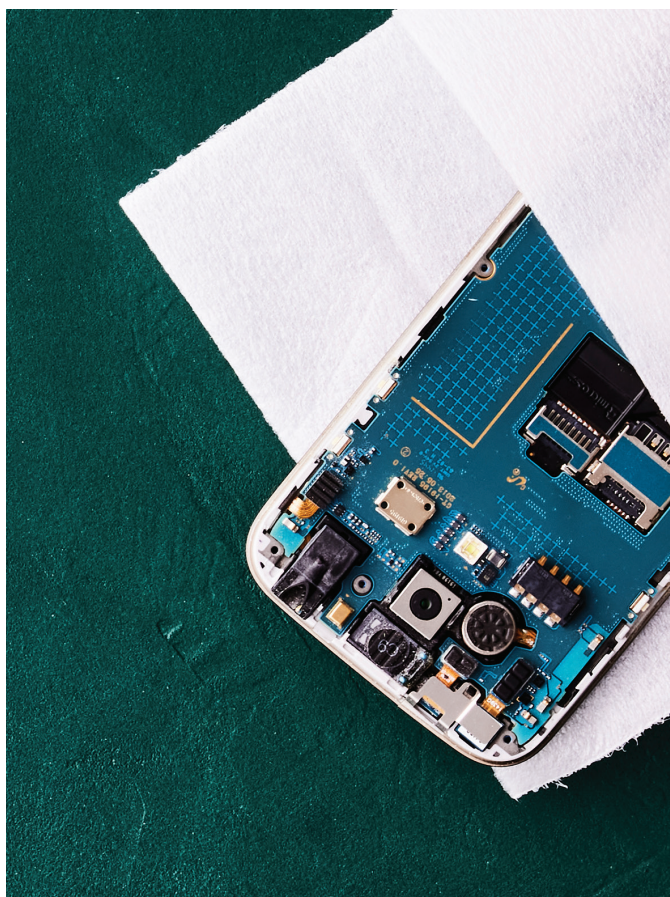
**Einar® 601 for PVC, PLA and PA anti-stat applications**

The use of efficient anti-stats in PVC is important in a range of different applications as both plasticized and rigid PVC will need anti-stat protection for various uses. **Einar® 601** offers excellent anti-stat protection in PVC where it has the right migratory profile to build anti-stat protection on the polymer surface. It has shown very good results in both rigid PVC as well as in combination with plasticizers. Recommended loading levels are 0.5 - 1.0% for most applications and may be higher in certain highly plasticized formulations.

**Einar® 601** is also the perfect plant-based anti-static additive for PLA. It effectively mitigates static charge buildup, enhancing surface conductivity and ensuring safe handling. By choosing **Einar® 601**, you can optimize the performance of your PLA products while maintaining eco-friendly standards.

Recommended loading levels are 0.7 - 1% for most applications.

**Einar® 601** is also an efficient anti-stat agent for PA film applications at loading levels of 0.4 - 0.7%.



**Einar® 601 product details**

|                               |  |           |
|-------------------------------|--|-----------|
| Physical/chemical properties: | polyglycerol ester   |           |
|                               | free fatty acids, max.   | 3%        |
|                               | free glycerol and polyglycerol, max.                                 | 7%        |
|                               | colour   | off-white |
|                               | form at 25°C   | paste     |
| Storage conditions:           | Should be stored in a cool and dry place in tightly closed packaging |           |
| Packaging:                    | 180 kg/396.8 lb net in steel drum                                    |           |
| Product form:                 | Einar® 601 comes in paste form                                       |           |
| Total shelf-life:             | min. 24 months   |           |

**Guidelines for use**

**Einar® 601** should be incorporated into the PE, EVA, PA and PLA polymer matrix via a masterbatch. The physical form of the additive requires that liquid dosing is used in order to meter the additive adequately.

**Einar® 601** can be easily incorporated into a PVC compound and can be mixed well with other liquid products in a plastisized PVC formulation.



# Sustainable solutions for the polymers industry

## Health and Safety

**Einar®** is identified as non-toxic and is not expected to cause irritation to the skin, eyes or lungs. Detailed MSDS is available on request.

## Legal status and other regulatory information

### **Einar® 601**

- is a dual use additive for use in food (E475) and polymers
- complies with the purity requirements of FAO/WHO regarding food additives (JECFA)
- is manufactured in accordance with Danish- and EU regulations and under hygienic conditions
- may be used in plastic materials and articles intended to come into contact with foodstuffs in accordance with Regulation (EC) No. 10/2011 on plastic materials and articles intended to come into contact with food
- complies to FDA 21 CFR 172.854, and may be used in food contact materials in accordance with TOR Nos. 1996-007, 1998-005, and 1998-021
- Roundtable of Sustainable Palm Oil (RSPO) certificate available on request with order
- Kosher & Halal certificates and REACH registration available on request

**To find out more or to order samples of Einar® 601, visit [polymers.palsgaard.com](https://polymers.palsgaard.com) or contact us via [polymers@palsgaard.com](mailto:polymers@palsgaard.com)**

**BRINGING GOOD THINGS TOGETHER**

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Heart working people