



Strippable Semiconductive Product Handling Guide

DOW ENDURANCE™ strippable semi-conductive insulation shields are specially formulated compounds designed for medium voltage (MV) power cables. DOW ENDURANCE™ HFDA-0693 BK and DOW ENDURANCE™ HFDA-0693 BK LS are delivered in free-flowing pelletized form for direct use in conventional cable extrusion processes.

The importance of proper handling

Attention to shipping and storage conditions is important to maintain these products in free-flowing form. Improper handling may cause “blocking” which is a condition defined as the undesirable adhesion between plastic pellets.¹ This phenomenon is characterized by the intermeshing of individual product pellets and is the result of polymer softening due to pressure (weight) or elevated temperatures during shipping and storage.

Material blocking

Blocking, which is sometimes referred to as “agglomeration,” occurs when the product is subjected to a static load over time. This load can compress the pellets, which maximizes the contact surface area between pellets. The resulting deformation can cause physical interlocking of the pellets and loss of flowability (see Figure 1).

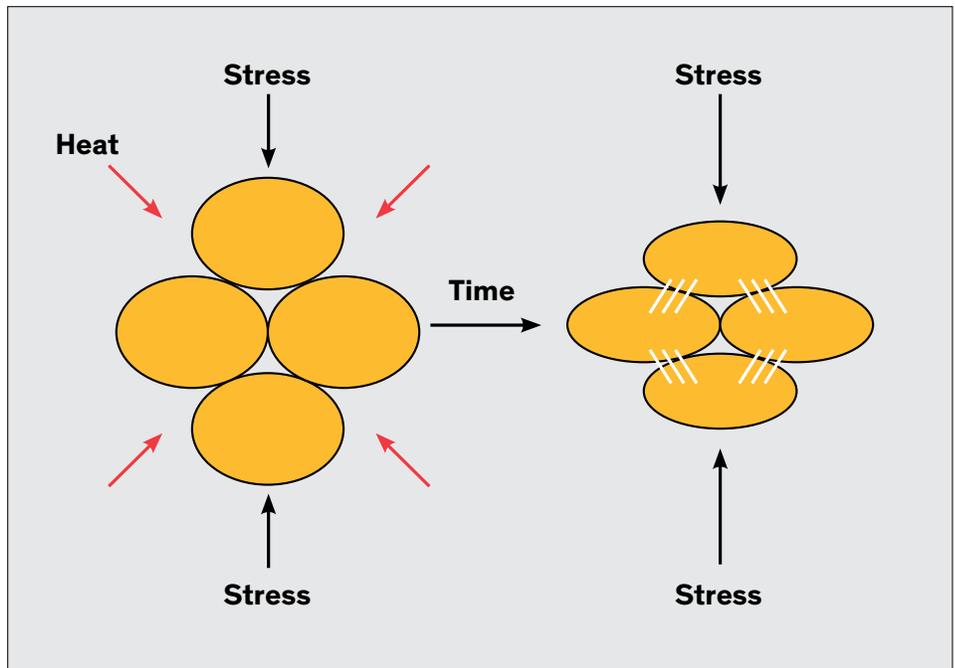
- Static load deforms pellets over time, which occurs faster at elevated temperatures
- Pellets compress, maximizing contact surface area
- Deformation results in an interlocking of the pellet surfaces

Blocking occurs more quickly at temperatures approaching or exceeding the softening point of the material. Furthermore, subsequent exposure to freezing temperatures during storage or unloading operations can exacerbate blocking. Increased exposure time to load pressure and out-of-specification temperatures during shipping, unloading and storage make the shipment more susceptible to blocking.

Handling recommendations

The guidelines in this document can help users avoid problems in the handling and storage of DOW ENDURANCE™ strippable semiconductive insulation shields. For long-term storage, the material should be protected from exposure to elevated temperatures (not to exceed 35 °C), with a recommended storage temperature between 10 and 23 °C. Unloading of the product should occur at temperatures between 10 and 30 °C.

Figure 1: Blocking mechanism



¹Lee, S. M. (1989). Dictionary of Composite Materials Technology. Lancaster, PA: Technomic Publishing Company Inc.

Bags, super sacks, octabins, and boxes
DOW ENDURANCE™ strippable semiconductive insulation shields are supplied in super sacks, octabins and boxes (gaylords).

- Store in a temperature-controlled environment if possible. Temperature fluctuations may be minimized by storing the product close to ground-level in a warehouse
- Always consume material on a first-in, first-out (FIFO) basis
- Ensure that foil liners and super sacks remain sealed until use



If you have a blocking problem

Blocking is usually not a problem when DOW ENDURANCE™ strippable semiconductive insulation shields are handled correctly. However, in the event blocking does occur, follow these steps to resolve the problem:

- Inspect the product to confirm that the problem is due to blocking and not melting.
 - **Melting:** If the product appears to be melted (does not unblock after returning to room temperature and relieving pressure), then it may have been exposed to excessive temperatures and the blocking may be irreversible.
 - **Blocking:** In contrast to melted material, blocked product pellets are not permanently joined together. They can often be returned to a friable (free-flowing) condition after static load is relieved and/or after the product is placed in ambient temperature conditions (10-23 °C) for a period of time (depending upon the severity of the blocking).
- For top-unloading boxes, a box vibrator, tilt, or mechanical agitator may be used to help break up blocked pellets.
- For super sacks, the forces involved in lifting the super sack out of the box may be sufficient to break up blocked pellets.

- To further relieve blocking, move the product to an ambient environment (10-23 °C) and allow time for pellet relaxation, or accelerate material recovery by gently applying mechanical force.
- Use of conditioned air (below 30 °C) for transferring the product will limit exposure to moisture and other contamination, as well as prevent pellets from fusing during conveying.
- Cooling on the hopper or throat of an extruder can prevent product pellets from fusing if the temperature is maintained below 40 °C.
- Heated drying of pellets is not recommended as this can cause pellets to agglomerate and block together.
- Call your Dow customer service representative for specific recommendations. Provide lot numbers, pictures and collected samples if possible.

About Dow Electrical & Telecommunications

Dow E&T, a business unit of The Dow Chemical Company ("Dow"), is a leading global provider of products, technology, solutions and knowledge that sets standards for reliability, longevity, efficiency, ease of installation and protection that the power and telecommunications industries can count on in the transmission, distribution and consumption of power, voice and data. Understanding that collaboration is essential to success, Dow E&T works together with cable makers, other industry suppliers, utilities, municipalities, testing institutes and other organizations around the world to help develop solutions and create mutual value that will sustain these industries for years to come. For more information, visit www.dow.com/electrical

Dow Electrical & Telecommunications

Houston Dow Center
1254 Enclave Parkway
Houston, TX 77077
USA

US

Toll Free 800 441 4DOW
989 832 1542

International

Europe / Middle East + 800 36 94 63 67
Italy + 800 783 825
Asia / Pacific + 800 77 76 77 76
+ 60 37 958 3392
South Africa + 800 99 5078

dow.com

dow.com/electrical

Notice: No freedom from infringement of any patent owned by Dow or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, the Customer is responsible for determining whether products and the information in this document are appropriate for the Customer's use and for ensuring that the Customer's workplace and disposal practices are in compliance with applicable laws and other governmental enactments. Dow assumes no obligation or liability for the information in this document. No warranties are given; all implied warranties of merchantability or fitness for a particular purpose are expressly excluded. This document is intended for global use.