

ESD-PROOF POLARIZER

BACKGROUND OF THE INVENTION

Field of Invention

The present invention relates to an electrostatic discharge (ESD) proof (ESD-proof) polarizer and, more particularly, to a polarizer structure that provides ESD protection. The polarizer includes a high transparent ESD protection adhesive layer, which may prevent an adhesive layer and the polarizer from an ESD event when a protective film is detached from the polarizer, and therefore avoid damage to the functions of an object to which the polarizer is attached. Furthermore, when an ESD-proof PET release film is detached from the polarizer, no ESD can occur on the adhesive layer of the polarizer. Accordingly, a liquid crystal screen to which the ESD-proof polarizer is attached may be protected from damage caused by ESD.

Related Art

Polarizers, which are generally applied to photoelectric video products, are popular and indispensable components of a liquid crystal screen because of high transparency and optical polarization.

As shown in FIGS. 1 and 2, a conventional polarizer Z includes a polarizer film PT, a protective film PA attached to one side of the polarizer film PT, an adhesive B coated on the other side of the polarizer film PT, and a release film R. After the release film R is detached from the polarizer Z, the polarizer Z may be attached to a liquid crystal screen LD by using the adhesive B. To facilitate storage, a polarizer PTBR may generally take the form of a sheet, as shown in FIG. 3.

Generally, PET-based protective films and PET-based release films may be highly susceptible to ESD. Although electrostatic charge on the PET-based film may facilitate expelling air bubbles from the PET-based film and hence facilitate adhesion between the protective film and an object to which the protective film is attached, however, as shown in FIGS. 4 and 5, ESD may occur while attaching or detaching the protective film.

Accordingly, it may be difficult to apply the PET-based protective films to objects vulnerable to ESD because such films cannot effectively protect the objects from ESD.

SUMMARY OF THE INVENTION

5 In order to solve the above-mentioned problems in prior art, a novel "ESD-proof polarizer" is devised. A conductive agent and an adhesive are mixed and then coated on a plastic film to provide ESD protection for the polarizer and an object to which the polarizer is attached, such that no ESD occurs during detaching and/or attaching of protective film from/to the release film.

10 To achieve the above objects, the present invention provides but not is not limited to the following technical means. The present invention includes a polarizer and a transparent plastic film substrate having one side coated with a high transparent ESD-proof adhesive layer, and the other side coated with an ESD-proof agent. Furthermore, one side of the polarizer is coated with an adhesive layer for attaching the polarizer to an ESD-proof PET-based release film. The ESD-proof PET-based release film includes a PET substrate
15 having one side coated with another ESD-proof agent and then a release agent. When the protective film or the release film is detached from the polarizer, no ESD occurs on the adhesive layer and the polarizer, such that a liquid crystal screen beneath the ESD-proof polarizer may be protected from ESD.

BRIEF DESCRIPTION OF THE DRAWINGS

20 The present invention will become more fully understood from the detailed description below when read in conjunction with the appended drawings. The drawings are provided for illustration only, and thus are not limitative of the present invention. In the drawings:

FIG. 1 is a schematic planar view of a conventional polarizer protective film;

FIG. 2 is a cross-sectional view of a portion of the conventional polarizer protective
25 film of FIG. 1;

FIG. 3 shows a storage state of a polarizer protective film;

FIG. 4 shows an operating state of a conventional protective film;

FIG. 5 shows the states of detaching and attaching a conventional protective film;

FIG. 6 is a cross-sectional view of the present invention;

FIG. 7 is a cross-sectional view of an ESD-proof film attached to a polarizer; and

5 FIG. 8 is a cross-sectional view of an ESD-proof PET-based release film.

DETAILED DESCRIPTION OF THE INVENTION

FIG. 6 shows a cross-sectional view of an ESD-proof polarizer RS-SPTB of the present invention. It is clearly shown in the drawing that the ESD-proof polarizer of the present invention includes an ESD-proof film SP, a polarizer PT, an ESD-proof PET-based release
10 film RS, and an adhesive layer B coated between the ESD-proof PET-based release film RS and the polarizer PT. The ESD-proof film SP includes a transparent plastic film PQ having one side coated with an ESD-proof agent AS and the other side coated with an ESD-proof adhesive layer BS, which is attached to a non-adhesive side of the polarizer PT. The ESD-proof PET-based release film RS is attached to the adhesive layer B, i.e., an
15 adhesive side of the polarizer PT. The ESD-proof PET-based release film RS includes a PET film having one side coated with another ESD-proof agent AS and then a release agent S. The release agent S is attached to the adhesive layer B. The present invention accordingly includes the ESD-proof polarizer SPTB as shown in FIG. 7 and the ESD-proof PET-based release film RS as shown in FIG. 8.

20 With the high transparent ESD-proof adhesive BS, the ESD-proof protective film may function to provide ESD protection each time when the protective film is detached from or attached to the polarizer. During detaching, no ESD may occur between the ESD-proof PET-based release film RS and the adhesive layer B, or occur on an object to which the polarizer is attached. As a result, the object may be protected from ESD. The ESD-proof
25 polarizer is designed with ESD-proof materials and arranged in an ESD-proof structure to provide ESD protection.

List of Reference Numerals

	PA	Conventional protective film
	PET	PET film (polyester film)
	BS	High transparent ESD-proof adhesive layer
5	S	Release agent
	PQ	Transparent plastic film
	RS	ESD-proof PET-based release film
	SP	Protective film coated with an ESD-proof adhesive layer and an ESD-proof agent
10	SPTB	ESD-proof polarizer
	RS-SPTB	ESD-proof polarizer
	AS	ESD-proof agent
	B	Adhesive
	PT	Polarizer
15	PTBR	Conventional polarizer protective film and release film
	PTB	Conventional polarizer containing protective film
	R	Release film
	Z	Polarizer at a storage state
	LDSNT, CSNT, and TFT-LCD	Liquid crystal panel
20		Attaching
		Detaching and attaching



ESD

CLAIMS

What is claimed is:

- 5 1. An electrostatic discharge (ESD) proof (ESD-proof) polarizer for ESD protection, the ESD-proof polarizer comprising a transparent plastic film, an ESD protection layer, and a transparent conductive adhesive layer, characterized in that the transparent conductive adhesive layer is disposed at one side of the plastic film and the ESD protection layer is disposed at the other side of the plastic film.
- 10 2. The ESD-proof polarizer of claim 1, characterized by further comprising a polarizer attached to the transparent conductive adhesive layer.
3. The ESD-proof polarizer of claim 2, characterized by further comprising a release film, wherein the release film comprises a plastic film, an ESD protection layer, and a release layer.

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