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(54) Optical element package using a heat shrinkable film for a backlight unit of a liquid crystal display

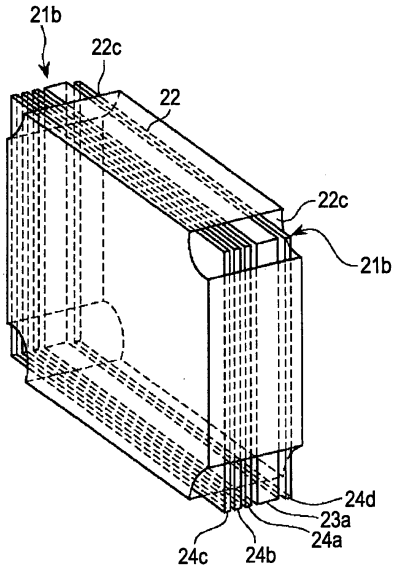
(57) An optical element package includes at least one optical element (24a,24b,24c,24d); a supporting member (23a) that supports the optical element; and a packaging component (22) having shrinkability that packages the optical element and the supporting member. The supporting member has two main surfaces having a rectangular shape, and an angle formed between an orientation axis of a main surface portion of the packaging component and a side surface of the supporting member is 8° or less.

A uniaxially or biaxially stretched sheet or film is preferably used as the packaging component (22). In the case where such a sheet or film is used, the packaging component (22) can be shrunk in the stretching direction by applying heat.

One or more openings (22c) may be provided at one or more positions corresponding to corners (21b) of the optical element composite (21).

Furthermore, the slope of residual shrinkage of the packaging component (22) can be measured.

FIG. 6B



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EUROPEAN SEARCH REPORT

Application Number
EP 08 01 6561

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	WO 2007/032454 A (FUJI FILM CORP [JP]; ENDO KEISUKE [JP]) 22 March 2007 (2007-03-22) * abstract; figures 17A-17D * * page 31, line 9 - page 32, line 25 * * page 36, line 11 - line 21 *	1-13	INV. G02F1/13357 G02B5/02 B65D71/08 B65D85/38
Y	US 4 745 014 A (HANAYA TORU [JP] ET AL) 17 May 1988 (1988-05-17) * abstract; figure 4 * * column 3, line 54 - line 58 *	1-5,10, 12,13	
Y	EP 1 811 320 A (TORAY INDUSTRIES [JP]) 25 July 2007 (2007-07-25) * paragraph [0008] - paragraph [0016] * * paragraph [0021] *	6-9,11	

TECHNICAL FIELDS SEARCHED (IPC)

G02F
G02B
B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	8 July 2009	Wolfrum, Georg

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

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Application Number
EP 08 01 6561

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

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LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 08 01 6561

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-5,10,12,13

An optical element package comprising at least one optical element;a supporting member that supports the at least one optical element; and a packaging component having shrinkability that packages the at least one optical element and the supporting member, wherein the supporting member has two main surfaces having a rectangular shape, and
wherein
an angle formed between an orientation axis of a main surface portion of the packaging component and a side surface of the supporting member is 8° or less.

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2. claims: 6-9,11

An optical element package comprising at least one optical element; a supporting member that supports the at least one optical elements; and a packaging member having shrinkability that packages the at least one optical element and the supporting member,
wherein
tan (Theta) = (Delta (m)) / L satisfies the relationship
-0.005 lower-equal (tan (Theta) = (Delta (m)) / L)
lower-equal 0.005
where L is a length of one side of the packaging component and Delta m is a residual shrinkage deviation of a side intersecting the side having the length L.

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 08 01 6561

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

08-07-2009

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US 4745014 A	17-05-1988	DE 3678004 D1	18-04-1991
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		WO 2006051804 A1	18-05-2006
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		US 2009027590 A1	29-01-2009

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

专利名称(译)	使用热缩薄膜的光学元件封装用于液晶显示器的背光单元		
公开(公告)号	EP2040113A3	公开(公告)日	2009-08-19
申请号	EP2008016561	申请日	2008-09-19
[标]申请(专利权)人(译)	索尼公司		
申请(专利权)人(译)	索尼公司		
当前申请(专利权)人(译)	索尼公司		
[标]发明人	OHTA EIJI HOSOYA KEN YAMAKITA SHIGEHIRO SHINKAI SHOGO KAKINUMA MASAYASU ISHIMORI TAKU		
发明人	OHTA, EIJI HOSOYA, KEN YAMAKITA, SHIGEHIRO SHINKAI, SHOGO KAKINUMA, MASAYASU ISHIMORI, TAKU		
IPC分类号	G02F1/13357 G02B5/02 B65D71/08 B65D85/38		
CPC分类号	G02F1/133606 B65D85/38 G02F2201/54		
优先权	2007246294 2007-09-21 JP		
其他公开文献	EP2040113A2		
外部链接	Espacenet		

摘要(译)

光学元件封装包括至少一个光学元件（24a，24b，24c，24d）;支撑光学元件的支撑构件（23a）;和具有收缩性的包装部件（22），其包装光学元件和支撑构件。支撑构件具有两个具有矩形形状的主表面，并且在包装部件的主表面部分的取向轴和支撑构件的侧表面之间形成的角度是8°或更小。优选使用单轴或双轴拉伸的片材或薄膜作为包装部件（22）。在使用这种片材或薄膜的情况下，包装部件（22）可以通过施加热量在拉伸方向上收缩。一个或多个开口（22c）可以设置在与光学元件复合物（21）的拐角（21b）对应的一个或多个位置处。此外，可以测量包装部件（22）的残余收缩的斜率。

FIG. 6B