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SUPPLEMENTARY EUROPEAN SEARCH REPORT

Application number:
EP 20 90 31 69

Classification of the application (IPC):

B32B 7/023, B32B 3/26, B32B 27/08, B32B 27/30, B32B 17/10, B32B 27/20

Technical fields searched (IPC):

B32B

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
Y A	US 2017100918 A1 (LU JUN [US]) 13 April 2017 (2017-04-13) * paragraphs [0001] - [0008], [0016] - [0018], [0030] - [0058], [0067] - [0082], [0089] - [0104], [0110] - [0113], [0122] * * paragraphs [0145] - [0148] * * tables 2,3 * * claims 1-20 * * figures 1-7 *	1-5, 9, 10, 14 6, 7
X Y	EP 2612843 A1 (SEKISUI CHEMICAL CO LTD [JP]) 10 July 2013 (2013-07-10) * paragraphs [0001], [0009] - [0017], [0021] - [0050], [0054], [0060] - [0076], [0077] - [0084], [0087], [0095] - [0097], [0099] * * examples 3,4; table 1 * * claims 1-15 * * figures 1-3,6 *	8, 11 1-5, 9, 10, 14, 15
X Y	US 2018117883 A1 (OLSON JAMES [US] ET AL) 03 May 2018 (2018-05-03) * paragraphs [0002], [0015] - [0045], [0080] - [0095], [0120] - [0135], [0203], [0204], [0235] - [0239], [0251] - [0254] * * claims 1-20 * * figure 5 *	12, 14 13
Y	KR 102005670 B1 (SKC CO LTD [KR]) 30 July 2019 (2019-07-30) * paragraph [0001] * * figures 3,4 *	13
Y	WO 2017105812 A1 (SOLUTION INC [US]) 22 June 2017 (2017-06-22) * paragraphs [0001], [0045], [0060], [0064] - [0066] * * claims 1,15 *	15

The supplementary search report has been based on the last set of claims valid and available at the start of the search.

Place of search The Hague	Date of completion of the search 30 January 2024	Examiner Girard, Sarah
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CATEGORY OF CITED DOCUMENTS

X: particularly relevant if taken alone	P: intermediate document
Y: particularly relevant if combined with another document of the same category	T: theory or principle underlying the invention
A: technological background	E: earlier patent document, but published on, or after the filing date
O: non-written disclosure	D: document cited in the application
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Application number:
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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:

1. claims: 1-5(completely); 14(partially)

A three-layered polymeric interlayer, whereby the second polymeric layer has a wedge shape; and at one or more locations on said interlayer, said second layer is at least 10 percent thicker than said first layer

2. claims: 6, 7(completely); 14(partially)

A three-layered polymeric interlayer, whereby the first layer has a thickness profile defined by the following formula: $(0.0014(De)+0.06) < T1 < (1.975141 - (1.6936517/(1+(De/155.2664)^{3.324064}))$, wherein De is the distance in centimetres from the thinnest edge of said interlayer, and wherein T1 is the thickness in millimetres of said first layer at De.

3. claims: 8-11(completely); 14(partially)

A three-layered polymeric interlayer, whereby at all points along a vertical centerline extending between the thinnest and thickest edges of the tapered zone of the interlayer, the following relationship is satisfied: $1.25T_{ca} > T_{cL} > 0.74T_{ca}$, where T_{cL} is the local combined thickness of the first and second layers and T_{ca} is the average combined thickness of the first and second layers calculated as follows: $T_{ca} = (T_{c1}+T_{c2})/2$, wherein T_{c1} is the combined thickness of the first and second layers at the thinnest edge and T_{c2} is the combined thickness of the first and second layers at the thickest edge.

4. claims: 12, 13(completely); 14(partially)

A three-layered polymeric interlayer, whereby the total solar transmittance (%T_t) measured at the thickest edge of the tapered zone is within about 3% of the total solar transmittance measured at the thinnest edge of the tapered zone, and wherein at least one of the first, second, and third polymeric layers includes an IR absorber, wherein each of the layers that includes an IR absorber is formed from the same polymeric material at both the thinnest and thickest edge of the tapered zone

5. claim: 15

A three-layered polymeric interlayer, whereby forming two skin layers that includes supplying said resin used to form said first skin layer to a die at a lower mass flow rate than the mass flow rate of said skin resin used to form said second skin polymeric layer, and at one or more locations on said interlayer, said second layer is at least 10 percent thicker than said first layer.

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

The supplementary search report has been based on the last set of claims valid and available at the start of the search.

Place of search The Hague	Date of completion of the search 30 January 2024	Examiner Girard, Sarah
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ANNEX TO SUPPLEMENTARY EUROPEAN SEARCH REPORT

Application number:
EP 20 90 31 69

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 30-01-2024.
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