

Title (en)  
DIFFRACTIVE SAFETY ELEMENT

Title (de)  
DIFFRAKTIVES SICHERHEITSELEMENT

Title (fr)  
ELEMENT DE SECURITE A DIFFRACTION

Publication  
**EP 1458578 A1 20040922 (DE)**

Application  
**EP 02805743 A 20021102**

Priority  
• CH 23642001 A 20011222  
• EP 0212245 W 20021102

Abstract (en)  
[origin: WO03055691A1] The invention relates to a safety element (2) made of plastic laminate (1), comprising a mosaic-like surface pattern consisting at least of surface elements. A reflecting border layer (8) covers optically effective structures (9) in the surface elements between a molding layer (5) and a protective layer (6) of the plastic laminate (1). Light falling on the plastic laminate (1) and penetrating a covering layer (4) of the plastic laminate (1) and the molding layer (5) is diffracted in a predefined manner by means of the optically effective structures (9). A diffraction structure is formed on the surface of at least one of the surface elements by superimposing a dim structure on a linear asymmetrical diffraction grid (24) having a spatial frequency ranging from 50 lines/mm to 2000 lines/mm. The dim structure has an average peak-to-valley height ranging from 20 nm to 2000 nm and a correlation length of 200 nm to 50,000 nm.

IPC 1-7  
**B42D 15/00**

IPC 8 full level  
**B42D 25/328** (2014.01); **B42D 15/00** (2006.01); **B42D 25/29** (2014.01); **D21H 21/42** (2006.01); **G03H 1/18** (2006.01)

CPC (source: EP KR US)  
**B42D 15/0033** (2013.01 - KR); **B42D 15/0053** (2013.01 - KR); **B42D 15/0073** (2013.01 - KR); **B42D 25/29** (2014.10 - EP KR US); **B42D 25/328** (2014.10 - KR); **D21H 21/42** (2013.01 - KR); **B42D 25/328** (2014.10 - EP US)

Citation (search report)  
See references of WO 03055691A1

Cited by  
US2023018648A1

Designated contracting state (EPC)  
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LI LU MC NL PT SE SK TR

DOCDB simple family (publication)  
**WO 03055691 A1 20030710**; AT E427837 T1 20090415; AU 2002367089 A1 20030715; CN 100427323 C 20081022; CN 1615226 A 20050511; DE 50213436 D1 20090520; DK 1458578 T3 20090706; EP 1458578 A1 20040922; EP 1458578 B1 20090408; ES 2325532 T3 20090908; JP 2005513568 A 20050512; JP 4377239 B2 20091202; KR 100939886 B1 20100129; KR 20040090971 A 20041027; PL 203882 B1 20091130; PL 371024 A1 20050613; RU 2004122474 A 20050310; RU 2291061 C2 20070110; TW 200301851 A 20030716; TW I245978 B 20051221; US 2005068625 A1 20050331; US 6924934 B2 20050802

DOCDB simple family (application)  
**EP 0212245 W 20021102**; AT 02805743 T 20021102; AU 2002367089 A 20021102; CN 02827321 A 20021102; DE 50213436 T 20021102; DK 02805743 T 20021102; EP 02805743 A 20021102; ES 02805743 T 20021102; JP 2003556246 A 20021102; KR 20047010802 A 20021102; PL 37102402 A 20021102; RU 2004122474 A 20021102; TW 91132969 A 20021108; US 49972204 A 20040809