



GUIDANCE NOTE

Use of Anti-Shatter Film (ASF) and Bomb Blast Net Curtains (BBNC)

Introduction

This guidance note replaces HOSDB 11A/08: Guidance Note: Use of Anti-Shatter Film (ASF) and Bomb Blast Net Curtains (BBNC) 11 June 2008 (Edition 1) and provides updated guidance on the use of ASF and BBNC.

It summarises recommended mitigation measures for use in existing buildings where there is a need to reduce the potential of flying glass entering the building, following an explosion. This is normally the case for heritage or Government buildings where replacement of existing windows is not permitted.

Where specially designed protection measures are required, such as for new buildings or when windows are being replaced, the use of laminated glass (or other appropriately designed glazing) is recommended. Further information can be found in NPSA Guidance Note: Glazing Enhancement to Improve Blast Performance, NPSA EBP 02/13. In such instances the glazing should be specified by engineers competent in the field of blast design (see Note 1).

Note 1: Suitable engineers may be members of the Register of Security Engineers and Specialists (RSES) (www.rses.org.uk) or will be able to demonstrate that they have the training and experience to meet the appropriate RSES competence of Protection Against the Effects of Blast.

Background information

The level of mitigation provided by the application of ASF, sometimes referred to as Fragment Retention Film (FRF), will depend upon the following factors: size of window; thickness of ASF; thickness of glass; and the type of glass. In addition the guidance below assumes that the ASF is 'daylight' fixed to annealed glass (sometimes referred to as float glass). Daylight fixed means that the ASF does not extend into the rebates of the window pane surround.

BBNC are particularly recommended for wood framed windows with small panes (e.g. 300mm across) such as Georgian style frames. If it is decided not to use BBNC behind such windows there is little point in increasing the film thickness beyond 100 micron.

The guidance does not cover the use of anchoring systems which may be used to increase the performance of ASF and help to retain the ASF in the frame. Where such systems are specified, the strength of the frame, fixings and structure needs to be assessed by a qualified engineer (see Note 1).

ASF shall comply with the appropriate classes of BS EN 12600:2002 Glass in building. Pendulum test. Impact test method and classification for flat glass. i.e. Class 2(B)2

Basic recommendations (pane area $<3.0\text{m}^2$ / $< 6\text{mm}$ thick)

The recommendations in Table 1 should be applied to windows with panes of area up to 3.0m^2 and for annealed glass up to 6mm thick and relate to the classes described in BS EN 12600:2002.

Threat ⁱ	Car bomb ⁱ	Van bomb ⁱ
Ground to 1 st floor	Class 1(B)1 ASF or Class 2(B)2 ASF + BBNC (see note below)	
2 nd to 5 th floor	Class 1(B)1 ASF or Class 2(B)2 ASF + BBNC	
6 th to 11 th floor	Class 2(B)2 ASF Only	Class 1(B)1 ASF or Class 2(B)2 ASF + BBNC
Above 11 th floor	No mitigation measures required	Class 2(B)2 ASF Only
Note: For medium to large panes (1.8m^2 to 3.0m^2) in Ground and 1st Floor windows the use of Class 1(B)1 ASF should be considered even if BBNC are fitted to provide additional mitigation.		

Table 1: Basic Recommendations for glazing with pane area $<3.0\text{m}^2$ / $< 6\text{mm}$ thick

Film identified as Class 2(B)2 shall be at least 100 micron thick and shall be certificated to comply with the BS EN 12600 Class 2(B)2 standard. Where BBNC are omitted, except for very small panes, Class 1(B)1 ASF should be substituted for Class 2(B)2 ASF. This may equate to films of approximately 175 micron thickness but can include thinner or multi-layer films with enhanced properties.

Basic recommendations (pane area $>3.0\text{m}^2$ / $> 6\text{mm}$ thick)

The recommendations in Table 2 should be applied to windows with panes of area greater than 3.0m^2 and with glass thicker than 6mm:

Threat ⁱ	Car bomb ⁱ	Van bomb ⁱ
Ground to 1 st floor	Class 1(B)1 ASF + BBNC	
2 nd to 5 th floor	Class 1(B)1 ASF	
6 th to 11 th floor	Class 2(B)2 ASF	Class 1(B)1 ASF
Above 11 th floor	No mitigation measures required	Class 2(B)2 ASF

Table 2: Basic Recommendations for glazing with pane area $>3.0\text{m}^2$ / $> 6\text{mm}$ thick

For Ground and 1st Floor windows 250–350 micron ASF should be used if BBNC are not fitted.

Internal glazing

Class 2(B)2 ASF should be applied to all internal glass on floors up to and including the 11th floor unless it is safety glazing (i.e. laminated or toughened glass).

Related guidance

The following guidance notes provide additional information relating to ASF and BBNC:

- NPSA 09/13: Specification of daylight fixed ASF
- NPSA 10/13: Peel Adhesion Testing and Assessment of ASF

¹ Contact your local Counter Terrorism Security Adviser (CTSA) for threat information. Details of device sizes have not been included so that the Guidance Note can be published as Not Protectively Marked.

Freedom of Information Act (FOIA)

This information is supplied in confidence and may not be disclosed other than to the agreed readership, without prior reference to NPSA. Within the UK, this material is exempt from disclosure under the relevant Freedom of Information Acts and may be subject to exemption under the Environmental Information Regulations and the Data Protection Act 1998.

Disclaimer

This document has been prepared by the National Protective Security Authority (NPSA). This document is provided on an information basis only, and whilst NPSA has used all reasonable

care in producing it, NPSA provides no warranty as to its accuracy or completeness. To the fullest extent permitted by law, NPSA accepts no liability whatsoever for any expense, liability, loss, damage, claim, or proceedings incurred or arising as a result of any error or omission in the document or arising from any person acting, refraining from acting, relying upon or otherwise using the document. You should make your own judgment with regard to the use of this document and seek independent professional advice on your particular circumstances.

© Crown Copyright 2013