

LEGEND

- 1 Heat Strengthened Glass type for cracking but remains in place.
- 2 Float Glass type for cracking but remains in place (Alternate to #1).
- 3 Tempered Glass type for breaking away and flying.
- 4 Mirror Mirror Glass for breaking away and flying.
- 6 Plastic Clear Plastic adhesive film to retain cracked Glass in frame.
- 7 Chromed Chrome spray painted on rear of Glass to simulate Mirror finish
- 8 Black Rear of presented glass face is painted black

1 Test Frame contains 8 sheets of glass, each sheet is 300mm x 900mm (1 foot x 3 feet)
 ie 1 Test Frame = 1200mm x 1800mm. (4 feet x 6 feet)

SHOT 1 Test Frame #1

Heat Strengthened Plastic	Heat Strengthened Plastic	Heat Strengthened Plastic	Tempered Chromed
Tempered Chromed	Tempered Chromed	Tempered Chromed	Heat Strengthened Plastic

Notes

- 7 Ms delays
- 5 Circuits
- Fired from bottom centre
- Single strands Primaline on HT glass (25mm standoff)
- Double strand Primaline on Tempered Glass (25mm standoff)
- Photosonic 300 FPS
- Other 150 FPS

Conclusions

Glass needs to be captured on 4 sides
 Flash from Det needs to be eliminated
 1 circuit was cut off- wires to be secured in accordance with direction of initiation
 Standoff blocks to be firmly secured
 Glass / frame adhesive requires suitable cure time

SHOT # 2 Test Frame #3

Mirror	Mirror	Mirror	Mirror
Mirror	Heat Strengthened Plastic & Chromed	Heat Strengthened Plastic & Chromed	Mirror

Notes

- 10 Ms delays
- 5 Circuits
- Fired from top centre
- Single strands Primaline on HT glass (25mm standoff)
- Double strand Primaline on Tempered Glass (25mm standoff)
- Flash arrestors placed around detonators
- Photosonic 300 FPS
- Other 150 FPS

Conclusions

Mirror glass appeared to travel further than tempered glass
 Det flash was not visible to the eye

SHOT # 3 **Test Frame #4**

Heat Strengthened	Heat Strengthened	Heat Strengthened	Float
Plastic & Black	Plastic & Black	Plastic & Black	Plastic & Black
Mirror	Mirror	Mirror	Mirror

Notes

13 Ms delays
 6 Circuits
 Fired from bottom centre
 Single strands Anoline on HT glass (15mm standoff)
 Double strand Primaline on Tempered Glass (25mm standoff)
 Flash arrestors placed around detonators
 Back of panels painted BLACK
 Photosonic 300 FPS
 Other 150 FPS

Conclusions

Cord flash was visible to the eye
 Water bags exerted hydraulic effect on glass
 broke out in det area

SHOT # 4 **Test Frame #2**

Tempered Black	Tempered Black	Tempered Black	Tempered Black
Tempered Black	Heat Strengthened Plastic Black	Heat Strengthened Plastic Black	Tempered Black

Notes

20 Ms delays
 5 Circuits
 Fired from top centre
 Single strands Primaline on HT glass (45mm standoff)
 Double strand Primaline on Tempered Glass (25mm standoff)
 Flash arrestors placed around detonators
 Back of panels painted BLACK
 Photosonic 150 FPS
 Other 150 FPS

Conclusions

Only test where delays were audible
 Around correct delay period for pressure effect?

SHOT # 5 **Test Frame #6**



Notes

Semi Transparent film on Float glass
 Single strand Primaline on glass laminate (45mm standoff)
 Photosonic 150 FPS
 Other 150 FPS

Conclusions

Laminate is unsuitable for use in breakaway glass sections

SHOT # 6	Test Frame # 7	250 ml Naphthalene	Both cameras @ 150 FPS 2 x # 1 Maroon initiation	Fire against Blue
SHOT # 7	Test Frame # 8	500 ml Naphthalene	Both cameras @ 150 FPS Single # 2 Maroon initiation	Fire against Blue
SHOT # 8	Test Frame # 9	750 ml Naphthalene	Both cameras @ 150 FPS Single # 2 Maroon initiation	Fire against Blue