BULLET RESISTANCE OF CORIAN®

Providing personnel protection is an important design consideration for commercial banks, savings and loans, credit unions and other buildings where large amounts of cash and negotiable securities are handled. Corian® contributes to personnel protection when used as a decorative facing on vertical surfaces around and below the teller's window.

This bulletin summarizes tests conducted to measure the performance of Corian® in such applications. All tests were conducted by H. P. White Laboratories, Inc., Bel Air, Maryland, an independent ballistics research and development organization specializing in ballistics research since 1936.

Test Procedures

Eighteen-inch-square test panels were prepared by laminating 1/2" and 3/4" Corian® sheet to 3/4" grade BB plywood with adhesive.[1] Lamination to plywood is an acceptable construction procedure and is necessary to achieve bullet resistance.

Test panels were mounted in a rigid frame perpendicular to the line of fire and 15 feet from the muzzle of the test weapon. Projectile velocity was measured 7.5 feet from the muzzle. A panel of corrugated board was positioned 18" behind the test panel as an indicator of penetration. Absence of any mark, indentation or penetration of the corrugated board was the criterion for passing the test.

Two specifications were taken into account in developing the aforementioned test procedure. The British Standards Institute Specification BS5051:Part 1:1973 was used as the primary guide for testing, because it specifies small arms ammunition that is generally available worldwide. Underwriters Laboratories Specification UL 752 was used to provide information on domestic ammunition.

Results

Typically, the result of projectile impact was fracture of the 18"-square test sample. Thus, it is important that Corian® sheet be thoroughly bonded to the plywood backer to retain the Corian® in a protective position and to shield the protected area from backside fragmentation.

Results of All Tests Conducted Are Summarized Below.

1. British Standards Institute Specification BS5051:Part 1:1973 specifies the use of 9mm Parabellum for testing of Level G0 attacks and .357 Magnum for testing of Level G1 attacks. The results of these tests indicate that laminated panels containing 3/4" Corian® offer protection against Level G0 and G1 attacks.

2. Underwriters Laboratories Specification UL 752 dated February 18, 1974, specifies the use of caliber .38 Super Auto for testing so-called medium-power threats. The results of these tests indicate that laminated panels containing 3/4" Corian® offer protection against medium-power threats.

3. While not part of the referenced standards, 3/4" Corian® withstood a single 12-gauge shotgun round loaded with 00 buckshot.

4. A summary of all tests conducted is shown on page 2.

[1]Plywood conforms to U.S. Product Standard PS-1 Softwood plywood. Adhesive conforms to American National Standard No. A136.1-1967 Type I organic adhesives, sometimes referred to as solvent-base spread mastics. The adhesive was trowel-spread and applied according to the manufacturer's recommendations.

BULLET RESISTANCE OF CORIAN® — *continued*

AMMUNITION	AVERAGE VELOCITY—fps	CORIAN® PERFORMANCE 1/2" SHEET	CORIAN® PERFORMANCE 3/4" SHEET	CLASSIFICATION BRITISH STANDARDS INSTITUTE	CLASSIFICATION UL
Single Shot Tests					
.30 Mauser	1673	NT	Pass	NA	NA
5.56 mm (.223)	3243	NT	Fail	NA	NA
7.62 x 39	2378	NT	Fail	NA	NA
12 Gauge 00 Buck	1358 1499	Fail —	— Pass	NA NA	NA NA
Two Shot, 11/2" Spacing					
.38 Super Auto	1220	NT	Pass	NA	Med. Power
.38 Super Auto	1208	NT	Pass*	NA	Med. Power
.357 Magnum	1397	NT	Fail	NA	High Power
Three Shot, 4" Triangle					
.22 Long Rifle	1282 1274	Pass —	— Pass	NA NA	NA NA
.38 Special (Std. Velocity)	739	Pass	NT	NA	NA
.45 ACP	798 808	Pass —	— Pass	NA NA	NA NA
.38 Special (High Speed)	1029 1120	Fail —	— Pass	NA NA	NA NA
.38 Super Auto	1206 1182	Fail —	— Pass	NA NA	Med. Power Med. Power
9 mm**	1253 1255	Fail —	— Pass	G0 G0	NA NA
.357 Magnum	1359 1336	Fail —	— Pass	G1 G1	High Power High Power
.30 Mauser	1679	NT	Pass	NA	NA
.44 Magnum	1544	NT	Fail	G2	Super Power

NT—Not Tested NA—Not Applicable
*Panel conditioned 18 hours at 33°F.
**Steel jacket (Canadian) was used. The British Standards Institute specifies a soft nose.

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