

EnvironMolds Technical Bulletin

Roma Plastilina No. 1 Ballistic Clay

Roma Plastilina No.1 is a homogenous non-hardening; oil based modeling clay and is the designated backing material for the testing of ballistic vests to both NIJ & HOSDB standards. The product comes in a case of 20 bricks. Each brick measuring 140mmX 63.5mm X 76mm and weighing 2-lbs or 907grammes. Color is gray-green.

- The NIJ, HOSDB, SK, ISO and other testing standards from around the world involve firing different types of bullets ranging from 9 mm to .44 Magnums and up to caliber 12/70 shotgun slugs, at body armor placed in front of a tray of ballistic clay, a material that emulates the human body.
- Typically these standard tests require vest designs to stop multiple shots at a certain velocity, and the clay must have less than a specified residual cavity depth commonly referred to as "back face signature deformation". For example, the NIJ specification requires six shots with less than 44 millimeters of "back face signature deformation".
- The clay is used at a controlled temperature and verified for impact flow before testing. After the armor is impacted with the test bullet, the vest is removed from the clay and the depth of the indentation in the clay is measured.
- The majority of military and law enforcement standards have settled on an oil/clay mixture for the backing material, known as Roma Plastilina. Although harder and less deformable than human tissue, Roma represents a "worst case" backing material when plastic deformations in the oil/clay are low (less than 20 mm). (Armor placed over a harder surface is more easily penetrated.) The oil/clay mixture of "Roma" is roughly twice the density of human tissue and therefore does not match its specific gravity; however "Roma" is a plastic material that will not recover its shape elastically, which is important for accurately measuring potential trauma through back side signature.
- Armor is more easily penetrated in testing when backed by harder materials, and therefore harder materials, such as Roma clay, represent more conservative test methods

Backer Type	Materials	Elastic/ Plastic	Test Type	Specific Gravity	Relative Hardness vs. Gelatin	Application
Roma Plastelina #1	Oil/clay mixture	Plastic	Ballistic and Slab	>2	Moderately Hard	Back face signature measurement. Used for most standard Testing

[Ballistic Resistance of Body Armor NIJ Standard-0101.06"](#) (PDF). *NIJ Standards*. [United States Department of Justice](#). July 2008. Retrieved 2008-11-13