

# Wave interaction under simultaneous detonation of three HE types

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The work is aimed at investigating detonation of three-piece (over the cross-section) flat charge. The central element of the charge is a plate of plasticized TATB ( $=1.91 \text{ g/cm}^3$ ,  $D=7.6 \text{ km/s}$ ) 20 mm thick and 140 mm long. Two thin (2...6 mm) plates of plasticized PETN ( $=1.52 \text{ g/cm}^3$ ,  $D=7.8 \text{ km/s}$ ) and plasticized RDX ( $=1.62 \text{ g/cm}^3$ ,  $D=8.4 \text{ km/s}$ ) with the same length as the central plate are attached to the latter from both sides. It is essential that detonation velocities of these side plates should be higher than that of the central one. All the plates were simultaneously subject to plane-wave initiation from the flange. Photochronography and X-ray techniques were used for recording detonation fronts. The first technique was used to record different times of detonation arrival at the opposite side of the charge. The second technique allowed recording the position of the detonation front at the moment of time close to the end of detonation. The main result of the work involves establishing the presence of non-detonating layers 2...3 mm thick on both sides of the central plate. Such detonation block in these layers is caused by preventive compression of the TATB plate under the effect of oblique shock waves due to higher detonation rates of the PETN and RDX plates.