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## Cutting 'edge' Super Bainite Vehicle Armour



It may seem like a strange solution but introducing holes to vehicle armour can actually provide a protective advantage. The trick is to think of them as circular 'edges' rather than holes. When a bullet hits an edge, it gets deflected and turns from a sharp projectile into a blunt fragment which makes it much easier to stop. The introduction of holes also reduces weight. As a result perforated Super Bainite steel armour is ballistically very efficient.

Invented, designed and manufactured in the UK, Super Bainite is experimental high performance armour steel developed to save the lives of UK Armed Forces. Traditionally the MOD has utilised offshore suppliers to fulfil its specialist armour requirements. However, following successful industrial production trials, directed by Dstl in partnership with Corus and Bodycote, the UK is now well placed to develop a secure onshore supply of specialist, high hardness steel armour.

Since 2000, the MOD's in-house science and technology centre (Dstl) has worked in collaboration with Cambridge University and QinetiQ to develop this unique armour material. Unlike conventional steels, the composition of Super Bainite was derived from first principles using thermodynamic modelling techniques. This allowed its processing, properties and cost to be optimised in months rather than years.

Whilst other armour steels need to be quenched and tempered, Super Bainite develops its properties by a completely new, low temperature mechanism called isothermal hardening. This enables ultra-high levels of hardness to be achieved without having to use expensive alloying additions.

Professor Peter Brown, a Dstl scientist says "Due to the unique process by which we have developed this new armour, Super Bainite is able to match the ballistic performance of the best off-shore armour steels at reduced cost."

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**Notes to editors,**

**Dstl**

The Defence Science and Technology Laboratory (Dstl) is a centre of scientific excellence for the Ministry of Defence (MOD). Its 3,500 strong workforce includes some of the nation's most talented and creative scientists with the brief to ensure that the UK Armed Forces and Government are supported in-house by the very best impartial scientific and technological advice. Dstl's position at the heart of the MOD means that its advice is trusted by governments, academia, industry and international partners. It offers timely and accurate advice at all levels of military planning and operations, both overseas and on the home front. For more information please visit [www.dstl.gov.uk](http://www.dstl.gov.uk)