

Case Study 09: Tungum in the Military

Tungum® tubing is mainly installed for hydraulic and pneumatic applications.

Tungum in the Military.

Tungum Alloy tubing has been used by the UK MoD for over 60 years. The main areas of use are for hydraulic & pneumatic applications in the Army & Navy.



It was used by the RAF but is no longer as other more lightweight materials have now taken its place. In salt-laden atmospheres such as tracks and roads, '316' stainless steel for example, is highly susceptible to crevice corrosion and chloride pitting. After just a few years of salt spray exposure, it may still look bright from a distance, but closer inspection reveals telltale signs of imminent failure to hold pressure.

Tungum alloy, however, possesses a natural protection mechanism whereby, on exposure to salt spray, a very thin oxide coating is generated over the exposed surface, no more than two thousandths of an inch thick, when complete. The tube becomes discolored, it may even have a verdigris coating, but under the oxide layer the tube material is perfect and will remain so for the lifetime of the installation.

Tungum's high proof to ultimate stress ratio enables system proof tests to be conducted well above working pressure, without risk of permanent set taking place. When used in high pressure hydraulic or pneumatic circuits, these features together with inherent "clean bore" characteristics combine in affording an easily constructed, high integrity system. This requires a minimum of purging and no external protective treatment.

Tungum continues to be utilized in UK Army fighting vehicles such as: Saxon APC's, FV430, AS90 & Challenger I & II.



Tungum has been the material of choice for Bofors in Sweden for many years. The main usage is on the hydraulic systems. Mainly the traverse gear & projectile loading systems.

Their Naval "Trinity" gun has been fitted with Tungum tubing right from the Mk I through to the latest Mk III version. Bofors have recently had their "Archer" land-based howitzer ordered by the Norwegian Army; Tungum is used on the hydraulic systems of this gun.



Tungum is specified on the hydraulic systems for the M777 being made by UK BAE in Barrow in Furness destined for use by the US military.

Tungum is also one of the materials chosen for the "FRES" vehicle specification being headed up by General Dynamics.