

STEELGARD *EXPORT*

**the high performance
corrosion preventive**

for the long-term storage
and export of metal parts,
machinery, spares, etc.

clean, effective, economical

VAPOR-TEK

STEELGARD EXPORT

In the past, the prevention of corrosion of metal parts and machinery destined for export, or subject to long periods of storage under adverse conditions, has been a fairly crude affair.

Until now, those responsible for ensuring that goods are delivered to the customer in perfect condition have been stuck (sometimes literally!) with thick heavy

the culmination of many years of research and field trials

difficult-to-apply coatings of variable and often poor quality.

Following years' of research and field trials, Vapor-Tek have developed the solution in the form of Steelgard *Export*. This patented product embodies all the latest technical features required of a clean, high quality yet economical corrosion preventive.

Protects all major metals and alloys

IRON	CADMIUM
STEELS	TIN
ALUMINIUM	ZINC
COPPER	NICKEL
BRASSES	LEAD
BRONZES	SILVER

Easy to apply

Steelgard *Export* is a free-flowing, mobile liquid which is exceptionally easy to apply by spray (including electrostatic), brush, dip, etc.



Thin transparent film

After evaporation* of the solvent, a soft film of approximately 10 microns in thickness (less than one-fifth the thickness of a human hair) remains on the surface. The transparency of the film allows inspection of the underlying metal.

**It is of the utmost importance that the solvent should be allowed to completely evaporate before packaging. Solvent vapours trapped in packages can remove the protective coating – with disastrous consequences.*

Spreads and penetrates

The fluid spreads and penetrates easily into nooks and crannies to ensure complete coverage of remote and inaccessible areas of complex machinery.



Water displacing

During application, Steelgard *Export* removes water, e.g. condensation, and prevents the trapping of moisture beneath the protective film.

Fingerprint neutraliser

Corrosive fingerprints, from handling, are neutralised.

Coat complete assemblies

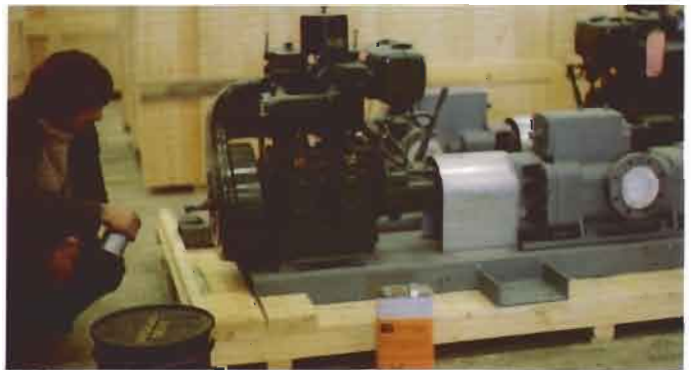
Steelgard *Export* is generally harmless to paints, plastics and other non-metals.* Entire assemblies – even those with electric motors, switchgear, belt-drives, etc. – can be treated all over.

protect the whole thing

This saves time and affords protection to painted surfaces: paint often being applied for reasons of appearance rather than protection.

save time

**Certain rubbers and other materials might be affected. If in doubt, carry out appropriate checks and consult Vapor-Tek Ltd.*



To assist with quality control

Steelgard *Export* is also available with a dye so that parts can be seen to be completely coated.

Now you see it now you don't

In certain applications it may be desirable to render the coating visible for inspection purposes while retaining the clean, colourless appearance for presentation to the customer. For this purpose an ultra-violet fluorescent grade is offered. This allows the coating to be made visible using a 'black light' while remaining colourless and transparent in normal electric light or daylight.



No sticky messy coatings

Steelgard *Export*'s thin and transparent film affords a much higher level of protection than the old-fashioned methods involving thick heavy coatings which can be difficult, messy and time-consuming to apply – and even worse to remove.

In many instances machinery or components **can be put into service** without the need to remove Steelgard *Export*. However, if removal is desired, it is easily achieved by simply wiping or by means of solvents such as white spirit, paraffin, or similar.



Component treated with a typical leading competitive product



Component treated with Steelgard *Export*. Note the transparency of the coating.

STEELGARD EXPORT

**extremely effective
highly economical**

**High coverage
low cost
A little goes
a long way**

Each litre of Steelgard *Export* will cover about 45 square metres of surface. This exceeds the coverage of some products by as much as three or four times.

Labour (and time) saver

Because Steelgard *Export* is so quick and easy to apply, time is saved. In fact, timed experiments have shown that the entire cost of the preservative can be defrayed by the saving in labour.



STEELGARD EXPORT

your 'insurance' against the unexpected

The conditions encountered, especially during deep-sea transportation, are generally beyond control and often extremely severe.

Clearly it is not enough to take account only of the 'expected' conditions: corrosion prevention procedures must be designed to deal with the 'worst possible case.'

'Tales of the Unexpected' include:

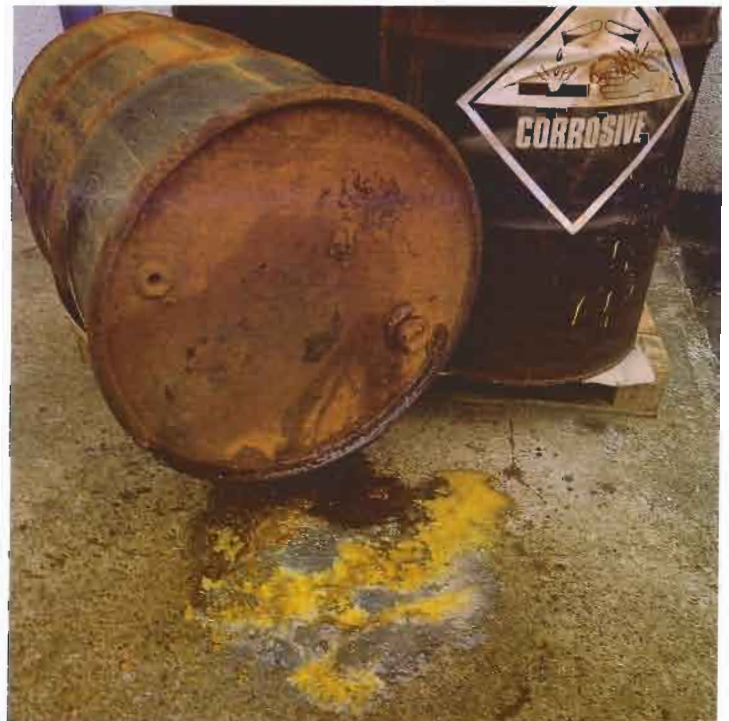
- Packing cases damaged – for example: by mishandling, accidents, vandalism, attempts at pilfering, insects, vermin, rotting.
- Untypically long delays – all the more likely in the case of deep-sea and long-haul destinations and especially a problem in tropical environments.
- Unusually severe weather conditions.



- The selection of unsuitable packaging materials.
- Inadequate re-packing following inspection of a consignment, e.g. by customs or other authorised officials.



- Corrosive fumes, liquids and dusts arising from other goods in the same warehouse or on the same ship or vehicle.



This is by no means a complete list: there is no shortage of 'horror stories' about mishaps to valuable consignments. Furthermore, the cost of rectifying the corrosion damage by refurbishment or replacement is only the start: restoration of customer confidence and goodwill must follow.

The high quality of Steelgard *Export* constitutes your 'insurance policy' against the unforeseen.

protection against all forms of corrosive attack

The problem of corrosion, especially of exported metal parts, is complex and many factors may play a part.

Steelgard Export is specifically formulated to deal with *all* the attacking elements encountered at *all* stages, from the assembly of parts to the finished article being put into service by the customer.

Note: Steps should be taken to ensure that parts are corrosion-free before assembly, final preservation and packaging. See back cover for information on other Vapor-Tek products formulated to provide a comprehensive range of suitable corrosion preventives.

SOME OF THE PROBLEM AREAS ARE OUTLINED BELOW

Corrosive Atmospheres – especially in industrial areas



Sulphur Dioxide. This is the widespread and highly corrosive atmospheric pollutant arising from the burning of coal, oil and gas. The attack starts as soon as the product begins to take shape and continues throughout the stages of manufacture, assembly, storage, packing, transportation and even after arrival at the destination.

Packing Case Corrosion

Acetic Acid and other Corrosive Vapours. Woods used for packing cases and pallets release highly corrosive acetic acid vapours. Those treated with fungicides and insecticides can introduce other sources of acid corrosion. In addition, certain paints, plastics, rubbers, resins and many other materials likely to be found alongside packaged metal items will release corrosive acid vapours. This 'packing case corrosion' is especially a problem in tropical areas due to high temperatures, humidities and attack by micro-organisms.

STEELGARD EXPORT

Corrosion during Transportation

Salt and Condensation. Especially in the case of deep-sea transportation, the wide variations in temperature and humidity can result in massive condensation on items in packing cases and containers. Another source of moisture is the timber used for packing cases and pallets which can contain up to 30% moisture. This is released when higher temperatures are encountered to become a further cause of trouble. Storms at sea produce droplets of highly corrosive salt water which permeate packages and settle on metal surfaces. Furthermore, this attack will continue even after the sea journey, as the salt will remain present.

Problems of High Temperatures



Melting and Gumming. Temperatures as high as 80°C have been recorded inside export packages when exposed directly to the tropical sun (for instance; when carried as deck cargo, or when standing on docksides awaiting despatch to the final destination). This can lead to another problem: many corrosion preventives actually melt and then drain away from surfaces at these temperatures, leaving the metal unprotected. Others will harden to a resin or gum and present serious difficulties of removal and cleaning. These problems do not occur with Steelgard Export.

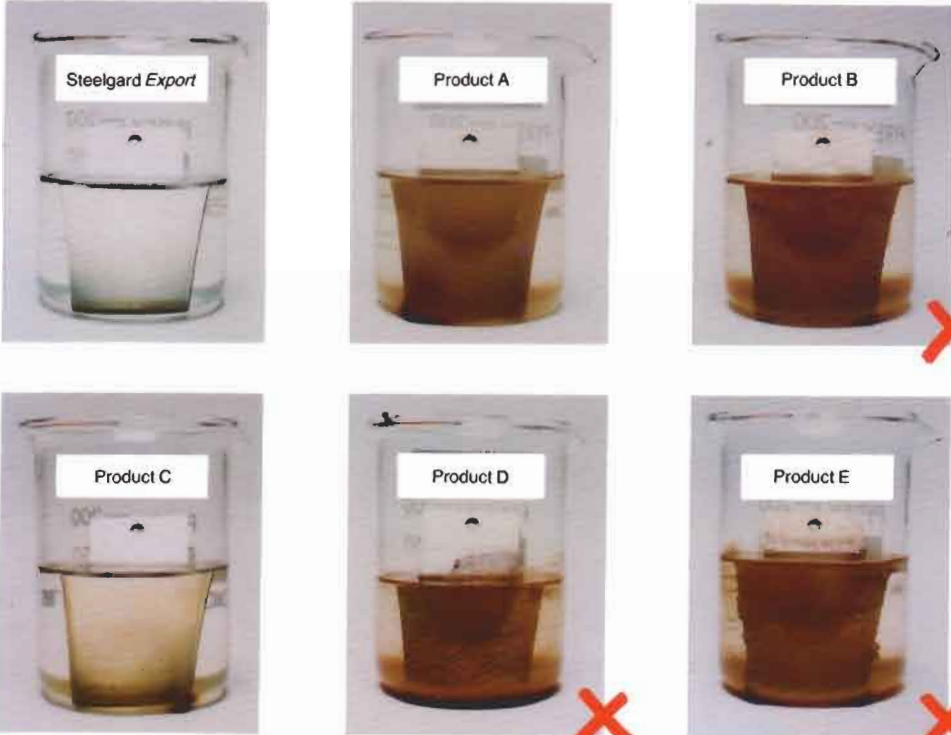
STEELGARD EXPORT

Steelgard *Export* has been laboratory tested against leading competitive materials. The unretouched photographs show the results of these experiments.


Protection against salt water

Coated steel panels immersed in synthetic sea water


Results after 840 hours (approx 5 weeks)
Products B, D and E were eliminated at this stage of the test owing to their obvious failure.



Results after 2736 hours (approx 16 weeks)



Results after 5000 hours (approx 30 weeks)



Protection against acid atmospheres

Steelgard *Export*



Product A



Product B



Product C



Product D



Product E



Coated steel panels exposed to **sulphur dioxide** vapours, i.e. general atmospheric pollution.

Steelgard *Export*



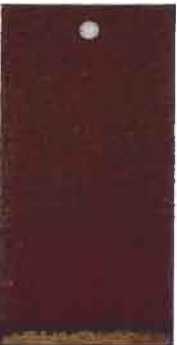
Product A



Product B



Product C



Product D



Product E



Coated steel panels exposed to **acetic acid** vapours, i.e. 'packing case corrosion.'

NOTES ON TEST PROCEDURES

The selection of the competitors' products was made by reference to a number of export packaging companies and to major manufacturers and exporters of metal goods and based on the most widely used materials.

To make certain of the tests being meaningful and fair, the principal 'big name' suppliers chosen were approached with the question: "What material would you recommend for the protection of valuable machinery and metal goods during long-term storage and deep-sea transportation under the most adverse of conditions?" They were also asked to supply samples together with detailed instructions for application.

In treating the test panels (mild steel to BS 1449, Part 1, grade and finish CR1/FF), the manufacturers' instructions were strictly

followed. The tests were conducted several times; each time in triplicate. In this way the accuracy, validity and repeatability of the tests were established.

Further details of the test procedures are available on request.

PROOF OF THE PUDDING

Following the laboratory work, extensive practical trials have been carried out on a wide and varied range of machinery and equipment shipped to over fifty countries throughout the world.

Journeys through all climates and conditions have taken as long as three months door-to-door and, in some cases, goods have then been stored at their destination for many additional months after arrival.

At the time of going to press, **not a single instance of failure has been reported.**

Resistance to high temperatures

Steelgard *Export*



Product A



Product B



Product C



Product D



Product E



Heat stability test: the protectives were applied to the panels leaving the lower portion uncoated (approx. 125mm). The panels were then subjected for two days to a temperature of 80°C (176°F). (Such high temperatures are not uncommon inside export packages when exposed directly to the tropical sun).

Only Steelgard *Export* has stayed in place. The competitive products show varying tendencies to melt and drain away or to harden to a resin or gum.



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Surface Treatments · Corrosion Preventives · Chemical Products
Ministry of Defence Approved Manufacturers & Stockists.

STEELGARD 'EXPORT' **TYPICAL PROPERTIES**

*Appearance	:	Light amber, mobile fluid
Specific gravity (20°C)	:	0.86 - 0.88
Flash point (PMCC)	:	40°C minimum
Viscosity	:	16 cps (approx)
Film Thickness	:	10 microns
Film Weight	:	10g per sq.metre
Film Type	:	Transparent soft gel
Sp. gravity of film	:	0.96
Coverage	:	45 sq. metres per litre
Solubility in water	:	nil
pH aqueous dispersion	:	6 - 7 pH units
Application	:	Brush, swab, spray, dip, roller.
Removal of coating	:	Solvents (white spirit, kerosene, chlorinated solvents) Vapour degrease Alkaline cleaner
Approximate drying time to 95% solvent evaporation (18°C, still air)	:	One hour

* Available with transparent, light yellow dye to render film visible for quality control purposes.

Also available with fluorescent dye visible only ultra-violet (black) light.

General Notes

Steelgard *Export* has an indefinite storage life and requires no special handling or storage facilities (see Health & Safety Notes below). However, on standing for several days, it forms a very light gel and it is necessary to 'break' the gel by agitation before use. This will quickly restore it to its mobile liquid form. In the case of smaller containers (up to 25 Litre) simply shake the can. For larger drums (200 Litre) a specially designed agitator is available.

Health & Safety

Steelgard *Export* contains a petroleum solvent (flash point 40°C minimum). It is, therefore, classed as 'flammable' and should be treated accordingly. Fires or spillages should be dealt with in the same manner as for white spirit or petroleum distillate.

It contains no harmful or toxic materials. As with all petroleum solvent and oil based products, prolonged or repeated skin contact should be avoided and appropriate protective clothing worn where necessary.

Steelgard *Export* should be used in a well ventilated area, especially where spray applications are involved.

More detailed information is available on request.

Technical Service

All Vapor-Tek products are backed by comprehensive technical and laboratory services including research and test facilities. Qualified staff are on hand to discuss the use of Vapor-Tek products and to advise on general problems of corrosion.

Other Vapor-Tek Products

Steelgard GP. A solvent deposited ultra-thin film corrosion preventive widely used for the protection of metal parts during storage or prior to assembly. Its corrosion prevention, lubricating and penetrating properties make it an ideal maintenance or assembly fluid which ensures that components remain corrosion-free before, during and after assembly. Steelgard **GP** is fully compatible with Steelgard *Export* and need not be removed prior to subsequent application of the latter grade.

Vaporol. This is of special interest to those involved in long term storage and exporting. Vaporol is a combined **vapour-phase** and **contact** inhibitor oil. Its unique combination of properties enable the **inside** of difficult-to-reach items to be protected simply, quickly and inexpensively. It is especially suited to the preservation of engines, gearboxes, pumps, compressors, fuel and other tanks, hydraulic systems and the like. It is also used in containers and packing cases **in combination with Steelgard Export**, thus ensuring a degree of protection to those areas which might not have been adequately coated during the application of the latter (due to difficulty of access, operator error, etc.). Vaporol applied to the inside of timber containers can take the place of expensive VPI (vapour phase inhibitor) paper to give added protection to the contents.

In addition to the above, the Vapor-Tek System of corrosion preventives includes:

- High performance lubricating and corrosion preventive greases
- Speciality fluids for the protection of non-ferrous and mixed metal systems
- Special acid fume resistant grade for use in highly contaminated atmospheres; e.g. acid pickling, metal plating operations and chemical plants.
- Ultra low-toxicity preservatives for use in schools, kitchens, dairies, abattoirs, etc., and on food processing and packaging machinery.
- Ultra low-sulphur maintenance fluid for use on steam generating equipment.

Other grades can be formulated to meet specific requirements.