PRESERVATION, PACKING

AND PREPARATION FOR SHIPPING

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1. SCOPE

This procedure describes how VSI Controls preserves, prepares and packs valves, desuperheaters, and their actuators complete with all accessories for shipment.

The following items shall always be shipped in separate packages:

- Spares for erection, commissioning and prior to commercial operation.
- Recommended spares for operation
- Special tools for plant operation
- Returnable materials and tools

2. APPLICATION

This procedure is considered as VSI Controls "standard" and will be applied for all orders where no Customer-specific requirements for preservation or packing and preparation for shipment are applicable.

3. RESPONSABILITIES

The Sales Dept. is responsible for defining the Customer requirements relevant to preservation and packing of final product, and for communicating the information to the other departments through the "internal job" documentation.
The Quality Control Dept. (QC) is responsible for verification of the correct application of this Guideline and/or for the contractual documentation.

4. REFERENCES DOCUMENTS

- Customer requirements
- UNI EN ISO 780:2001 "Packing - marking for goods handling"
- ISPM n.15 - International Standards for Phytosanitary Measures n. 15
- D. Lgs. 81/08 and amendments, errata and addenda.

5. HANDLING AND PRESERVATION INSTRUCTIONS

5.1 PRESERVATION OF INTERNAL SURFACES

After the final pressure test of valves, test fluid shall be drained, and the internal surfaces shall be accurately dried with air, so that no traces of foreign material or moisture remain.
After drying, the internal surface of carbon steel valves shall be treated with a corrosion inhibitor which requires a manual removal before the valve's start-up.

The corrosion inhibitor is Tectyl 511 or equivalent. Tectyl 511 can be removed with mineral spirits or any similar petroleum solvent, hot alkaline wash or low pressure steam. If dried and cured, the film of TECTYL 511-M can also be removed with Tectyl Biocleaner. Refer to enclosed product data sheet.

5.2 PRESERVATION OF EXTERNAL SURFACES

The external surfaces of unpainted carbon steel valves shall be treated with a corrosion inhibitor to prevent rust. The corrosion inhibitor shall be Tectyl 511 or equivalent.
The inhibitor application shall be performed by spraying or brushing and it requires a manual removal before the valve's start-up (refer to paragraph 5.1 and enclosed product data sheet).
All the valve's bores shall be closed and protected by adhesive waterproof discs, plastic or plywood discs, fixed by waterproof adhesive tapes around the blank/flange circumference. The valve's holes on the valves (i.e. bellow vent, cap vent, etc.) must be closed.
Blind flanges/end protections shall not be used as surface for marking or tagging.

All the unpainted carbon steel threaded connections (male and female) shall be coated with a corrosion inhibitor, Tectyl 511 or equivalent, to prevent rust. The threads shall be protected by plastic plugs or equivalent to avoid contamination with other materials.

The Threads of lifting points must be greased and protected to avoid damages during handling.
Screwable lifting lugs, if present, must be attached with nylon straps to the valve.

5.3 HANDLING OF THE EQUIPMENT

During all operations, valves and actuators shall be lifted with proper lifting points. It is of outmost importance to avoid lifting of the valve using the actuator lifting points.
Handling shall be done with care in order to avoid any damages to the protective paint of valve and actuators. Any damage to the painting shall be repaired as per applicable painting procedure.

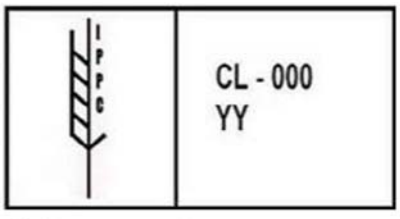
6. PACKING OF EQUIPMENT

6.1 CARTON BOXES

The carton packs (in standard commercial sizes), will be used to contain spare parts with total weight not exceeding 50 kg. For each valve, a dedicated box will be prepared. For weight above 50 kg, a wooden box will be prepared.

6.2 WOODEN PLATFORM, WOODEN BOXES

All wood used for packing must comply with International Standard for Phytosanitary Measures ISPM 15. A certificate of compliance will be provided.



Official ISPM 15 marking

All wood used for goods packaging shall be of suitable quality and shall comply at least with the following requirements:

-Relative humidity less than 20%. Knots over 50 mm in diameter shall not be accepted.

-Groups of knots covering a width larger than 1/3 of the total width of the board shall not be accepted.

-For all types of packing here described, plywood is an acceptable alternative to wooden boards. (pict.1)

-Plywood shall be water and moisture resistant and multilayer type (OSB). OSB boards shall have a minimum thickness of 9 mm.

Boxes and platforms will be prepared to be handled by means of slings or forklifts and will be suitable for transport by rail, truck, plane.

- Pict.1

6.2.1 PLATFORMS

Wooden platform and pallets must be built of boards nailed according to pict.2.

Wooden boards must have a minimum thickness of 15 mm (0.591 inch) for platforms that have to carry max. weight up to 500 kg (1100 lb). For greater loads, the minimum thickness of boards must be 20 mm (0.788 inch) and the minimum width 10 cm (3.937 inch). When required by Client, equipment can be protected with a protection with a barrier bag or heat-shrinkable polyethylene, as shown in picture 2

- Picture 2

Broken boards are not permitted.

The platform must be built with boards placed in the longitudinal direction.
The entrance for fork lift must be foreseen on the longer side.
The nails used for building must not protrude from the boards neither inwards nor outwards and must be bent.
The minimum dimension of beams used in the bottom must be 6x8 cm (2.362x3.15 inch) and must be placed with the wider side in vertical position.

6.2.2 BOXES for INLAND transportation

Wooden boxes must be built of boards nailed one close to the other according to pict. 3.
Wooden boards must have a minimum thickness of 15 mm (0.591 inch) for boxes that have to carry max. weight up to 500 kg (1100 lb). For greater loads, the minimum boards' thickness must be 20 mm (0.788 inch) ant the minimum width 10 cm (3.937 inch).
Boards that constitute the boxes' walls could be placed both horizontally and vertically.

Broken boards are not permitted.

The bottom of the boxes must be built with boards placed along the bigger dimension.
The entrance for fork lift must be foreseen on the longer side.
The nails used for building must not protrude from the boards neither inwards nor outwards and must be bent.
The minimum dimension of beams used in the bottom must be 6x8 cm (2.362x3.15 inch) and must be placed with the wider side in vertical position.

6.3 SEAFREIGHT WOODEN BOXES

Wooden boxes must be built of boards nailed one close to the other according to pict. 4.
Wooden boards must have a minimum thickness of 15 mm (0.591 inch) for boxes that have to carry max. weight up to 500 kg (1100 lb).

For greater loads the minimum boards' thickness must be 20 mm (0.788 inch) ant the minimum width 10 cm (3.937 inch). The boards must not have knots from side to side bigger than 40 mm (1.576 inch).
Boards that constitute the boxes' walls could be placed both horizontally and vertically.

Broken boards are not permitted.

The bottom of the boxes must be built with boards placed along the bigger dimension.
The entrance for fork lift must be foreseen on the longer side.
The nails used for building must not protrude from the boards neither inwards nor outwards and must be bent.
The minimum dimension of beams used in the bottom must be 6x8 cm (2.362x3.15 inch) and must be placed with the wider side in vertical position.
The wood used for the speaker must always be fumigated with attached certificate of fumigation.

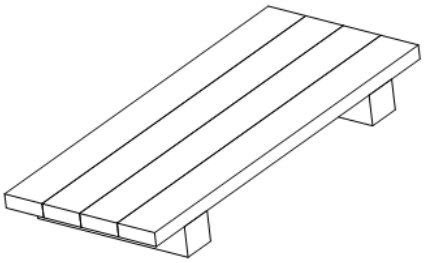
The boxes must have an inside covering (excluding the bottom) of polyethylene sheets or tarred paper reinforced with nylon net.
In addition, a polyethylene sheets or tarred paper must cover the top of the box and must overcome the four walls of at least 4-5 cm (1.575-1.968 inch), as shown in picture 5.

It is very important secure equipment inside the box to avoid its movement, if it is not it can hit the sides of the box breaking it.

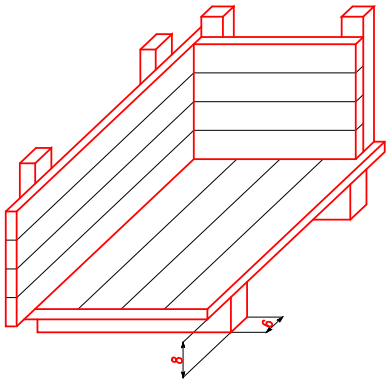
After the rust inhibitor is applied to any unpainted machined surfaces, these surfaces shall be adequately wrapped with a resistant waterproof paper or plastic containing VCI / VPI powder (Volatile Corrosion Inhibitor/ Vapor Phase Inhibitor). The preferred product is VpCI-126 CoExtruded Film or equivalent.
This wrapping shall be suitably fastened to the part in order to prevent it from becoming detached.
Sharp edges shall be padded with pH neutral materials to avoid breaks in the wrapping.

VCI / VPI (Volatile Corrosion Inhibitor / Vapor Phase Inhibitor) or desiccants (e.g. silica gel) shall be used to protect the internal metal surfaces of equipment. They must be used alternately, i.e. VCI / VPI and desiccants shall not be used together in the same enclosed space. When desiccants are used, they shall be within porous bags/sachets.
Each bag shall contain at least the minimum quantity recommended by the manufacturer of the drying product. The bags shall not be in direct contact with the metal surfaces to be protected and shall be evenly distributed within the enclosed space, i.e. inside the equipment itself or inside its primary moisture packaging.

It shall be preferable to use VCI / VPI to protect the internal metal parts of electrical machines and equipment (including electrical and control cabinets and similar items).

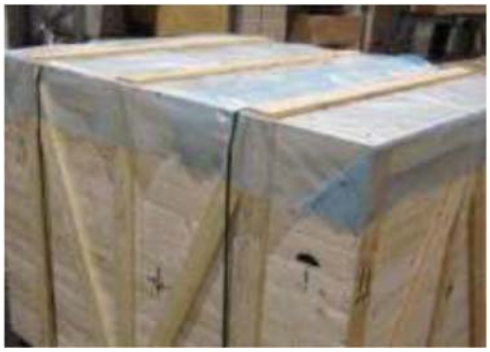


Picture 3



Picture 4

Picture 5



This type of packing ensures products' protection up to a period of six months, when properly stored in a sheltered place. After six months, it is recommended to verify the equipment and replace VCI/desiccant bags and restore the original case.

During valves' handling lifting equipment must be used (i.e. ropes, hooks, chains etc.) at the appropriate lifting points.

6.4 PROTECTION OF OPENINGS

All openings such as inlet and outlet pipes, feed-in and unloading, etc., will be plugged or covered with 10 mm thick plywood disks or plastic caps to prevent damage or the intake of humidity, filth or potentially corrosive elements.

7. MARKING

The platform and the boxes have to be marked reporting:

- Job Number,
- Customer P.O.,
- destination,
- the Recipient Name and other data,
- platform/box number,
- sizes and weights,
- other information according to the contract agreements.

Furthermore, it must be indicated on all sides from the packaging the high side and, if necessary, the lifting points by using international symbols.

Case Marking:

Marking shall be normally done with indelible paint. Characters shall be easy to read and sized proportionally to the available surface. Words, particular symbols and position of the marking shall comply with Client's request. The following symbol shall be present.

Fig. A = handle with care (mainly when delicate instruments, e.g. positioners, are present among the equipments)
Fig. B = center of gravity (for gross weights over 1000 kg)
Fig. C = keep indoor (for packings type "E/0")
Fig. D = this side up
Fig. F = do not stack
Fig. E = sling point

Fig. A

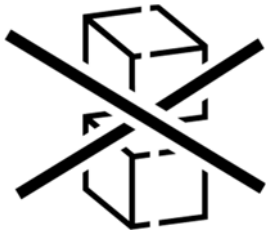
Fig. B

Fig. C

Fig. D

Fig. E

Fig. F



8. TAGGING

Valves shall be tagged in accordance to MSS-SP-25 and to the internal Guidelines.
Wooden Box shall be identified in accordance to UNI EN ISO 780.

9. DOCUMENTATION

The Shipping documentation shall accompany each lot or part of it to the delivery location.
On every platform/box a plasticized copy of the Packing List shall be applied.
A copy of the Packing List has to be sent to the Customer, at the time of package. i.e. prior to shipment

VpCI®-126 CoExtruded Film

High Technology Vapor phase Corrosion Inhibiting Films and Bags
Patented Worldwide
Multimetal VpCI Systems

DESCRIPTION

Vapor phase Corrosion Inhibitor (VpCI) 126 CoEx films combine the latest film technology with the most effective corrosion protection for all of your metal products. Sealing your product in Cortec VpCI films protects metal parts from all types of corrosion including rust, tarnish, stains, white rust, and oxidation for up to 5 years.* It's as easy as putting your product in a Cortec VpCI package!

Cortec VpCI films and bags replace conventional rust preventatives such as oils and desiccants. You save even more because Cortec VpCI packaging eliminates all the degreasing or coating removal required in the past. Your product can now be used immediately. VpCI-126 is transparent, making it easy to identify parts. Additionally, it does not contain free amines, phosphates, or halogen-based materials, and is non-toxic and recyclable.

VpCI-126 can be manufactured utilizing a wide array of the most advanced resins. Custom blends are available to give you the exact properties you need, whether it's improved puncture resistance, tear strength, or other requirements.

VpCI-126 CoEx films and bags protect metal objects as small as a needle, to as large as the contents of an oceangoing container.

* Depending on film construction thickness and application

MULTIMETAL VpCI

Metal parts packaged in Cortec VpCI-126 CoEx Film receive continuous protection against salt, excessive humidity, condensation, moisture, aggressive industrial atmospheres, and dissimilar metal corrosion. The VpCIs vaporize and then condense to metal surfaces in the enclosed package. VpCI reaches every area of your part, protecting its exterior as well as hard-to-reach interior surfaces. You get complete product protection during storage as well as during domestic and overseas shipments, virtually eliminating any rust claims.

FDA APPROVED AND RECYCLABLE

Cortec VpCI-126 has received approval by the Federal Drug Administration for use on food containers and food handling equipment. In addition, Cortec VpCI-126 has received approval from a leading institute regarding the recycling and disposal of packaging materials containing Cortec proprietary chemistry.

CORTEC CORPORATION

HIGH LEVEL OF CORROSION PROTECTION

The VpCI-126 Series is the best selling anticorrosion PE film in the world today, with the highest level of corrosion protection demonstrated by standard and internal corrosion test methods. For further testing and case history information, please contact your Cortec distributor or visit Cortec on the World Wide Web at http://www.CortecVCI.com.

METALS PROTECTED

- Aluminum
- Carbon Steels
- Stainless Steel
- Copper
- Brass
- Galvanized Steel
- Silicon Steel
- Silver
- Solder

WIDE VARIETY OF SIZES AND CONSTRUCTIONS

Cortec VpCI-126 is heat sealable and can be used with all types of manual or automated heat-seal packaging equipment. The material is available in a variety of standard and customized forms to protect small or large parts. Antistatic (ESD) varieties are available.
Cortec VpCI CoEx film is available in a variety of gauges ranging from 50-150 microns and various widths from 300mm-4000mm depending on construction.

VpCI-126 CoExtruded film is produced by EcoCortec, a European subsidiary of Cortec Corporation.

SHELF LIFE

The shelf life of VpCI-126 film is 2 years.

TYPICAL MECHANICAL PROPERTIES OF VpCI-126 COEXTRUDED FILM

Property		Test Method	Units	VpCI-126 CoExtruded Film		
Caliper		ASTM D6988	µm	50.00	100.00	150.00
Tensile Strength at Break	MD	ASTM D882-02	psi	3780.49	2972.68	3072.54
	TD			2790.21	3172.78	3279.37
Elongation at Break	MD	ASTM D882-02	%	141.80	513.50	612.00
	TD			677.00	781.00	870.00

*Typical mechanical properties represent average laboratory values and are intended as guides only, not as specifications.

FOR INDUSTRIAL USE ONLY
KEEP OUT OF REACH OF CHILDREN
KEEP CONTAINER TIGHTLY CLOSED
NOT FOR INTERNAL CONSUMPTION
CONSULT MATERIAL SAFETY DATA SHEET FOR MORE INFORMATION

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Valvoline Performance Products – Tectyl

Version: **TE035/01**

Tectyl™ 511-M

Premium solvent based corrosion preventive compound.

TECTYL 511-M is a solvent cutback, water displacing, oil based corrosion preventive compound.
TECTYL 511-M meets the performance requirements of Military Specification MIL-C-16173 D, Grade 5.
TECTYL 511-M is designed to protect ferrous and non-ferrous industrial parts and transportation components during covered shipment and inside storage.
TECTYL 511-M cures to a light amber colored, transparent oily film.

Approvals/Performance levels

Tectyl 511-M
Accelerated Corrosion tests: @ Average recommended DFT Humidity; 100 % RH; @ 40°C; ISO 6270-2 CH (Q-Panels, Type R, ASTM A1008) **20+ days** Humidity; 100 % RH; @ 50°C; ASTM D-1748 (2x4x1/8" Polished Steel Panels) **40+ days**
Estimated Protection Period Indoor: 18 months

Applications

Surface preparation:
The maximum performance of **TECTYL 511-M** can be achieved only when the metal surfaces to be protected are clean, dry and free of rust, oil and mill scale and a substrate temperature of 10-35 °C at the time of product application.

Application:
TECTYL 511-M is formulated to be used as supplied. DO NOT THIN **TECTYL 511-M**. Tectyl 511-M can be applied by low pressure air spray or dipping.

Removal:
TECTYL 511-M can be removed with mineral spirits or any similar petroleum solvent, hot alkaline wash or low pressure steam. If dried and cured the film of **TECTYL 511-M** can also be removed with Tectyl Biocleaner.

Features & Benefits

Superior Protection
At the recommended DFT Tectyl 511-M will protect against corrosion during storage and domestic transport.

Processing
Tectyl 511-M is easy to apply and easy to remove, when no longer needed.

Economical
With a DFT of only 7,5 microns, Tectyl 511-M can protect a big surface with just a little amount of the product.

Trusted since 1930
Since 1930, Tectyl™ protective coatings have been extending the operational life of cars, trucks, buses and other vehicles and equipment. The Tectyl name is synonymous with quality coatings that are easy to apply, long-lasting and easy to remove when no longer required.

For more information on Tectyl products, programs and services please visit
www.tectyl-europe.com

Typical properties
Typical property characteristics are based on current production. Whilst future production will conform to Tectyl specifications, variations in these characteristics may occur.

Tectyl 511-M	
Flashpoint; PMCC [°C]	40
Density @ 20°C [kg/ltr]	0,85
Recommended Dry Film Thickness over metal profile [microns]	7,5
Theoretical coverage @ recommended DFT [m²/ltr]	52,4
Non Volatile [weight %]	45
Viscosity; DIN (53211) Cup No. 2 @ 20°C (at time of manufacture) [sec]	45
Cure time @ 20°C [hours]	24
Volatile Organic Compound Content ISO 11890-2 (10.4) [g/ltr]	438

This information only applies to products manufactured in the following location(s): Europe

Health & Safety
This product is not likely to present any significant health or safety hazards when properly used in the recommended application and good standards of personal hygiene are maintained. Reference is made to the Safety Data Sheet (SDS) which is available on request via your local sales office or via the internet
http://sds.valvoline.com

Protect the environment
Comply with local regulations. Comply with local regulations. Do not discharge into drains, soil or water.

Storage
Tectyl 511-M should be stored at temperatures between 10-35 °C. Mild agitation is recommended prior to use. Due to its composition Tectyl 511-M can be subject to postproduction viscosity changes during storage. Under proper storage conditions Tectyl 511-M is best before 36 months after production date.

Caution
Adequate ventilation is required for cure and to ensure against formation of combustible liquid. THE PARTIALLY CURED FILM SHOULD NOT BE EXPOSED TO IGNITION SOURCES SUCH AS FLARES, FLAMES, SPARKS, EXCESSIVE HEAT OR TORCHES. Refer to The Safety Data Sheet for additional handling and first aid information.

Note
The addition of any product over or under this coating is not recommended. The use of additional coatings could result in chemical incompatibility, thus affecting the performance of this coating as stated in the Typical Properties section. If a primer, other than a Valvoline recommended product is required, written authorization must be obtained from Valvoline.

Replaces – TE035/01