

		NUMBER TY 6-19-619-81
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MASTER COPY

CONVENTIONAL INDEX

84/ 0848711 - 04 - TY - 4D126 TP

ALBUM No. 1

PARTS OF ANTIRADIATION INSIDE LINING

TY 6-19-619 - 81

TRANSLATED	Patel.Q.S	<i>[Signature]</i>		Ordnance Factory Project Hyderabad.
AUTHENTICATED				
TYPED	S.Kaladhax	<i>S.Kaladhax</i>	16/6/81	APPROVED <i>[Signature]</i>
EDITED	Patel Q.S	<i>[Signature]</i>	17/6/81	
	NAME.	SIGN.	DATE	

Ordnance Factory  
Project  
Hyderabad.

I - 2920

Number ,TY.6-19-619-81

Sheet...2..... Of .....11.....

PARTS OF ANTIRADIATION INSIDE LINING TY 6-19-619-81

( SUPERCEDES TY 6-11-467-78)

PERIOD OF INTRODUCTION FROM 01.01.1982 TO

01.01.1987

The present technical specifications defines the requirements and relates to parts of antiradiation inside and out side lining, meant for objects of armour tank technique.

In conventional designation of parts of antiradiation inside and out side lining with interlayer or without interlayer while ordering or as reference in technical document for articles following should be specified:

Description parts;

Designation of parts;

Designation of product, from which part is manufactured (main product); If manufacture of parts with inter layer designated as main product and through fraction product of inter layer, if manufacture of parts without inter layer designated only main product; dimensions of parts (if required) before designation of present technical specifications in brackets;

Designation of present technical specifications. Example of conventional designation of parts of inside (out side) lining without inter layer is as follow:

Liner(strap) 172.19.059-22 $\phi$  TY6-19-629 - 81.

Example of conventional designation parts of inside (out side) lining with inter layer is as below.

Liner (strap) 172.19.053-22 $\phi$  /17 $\phi$  TY 6-19-619-81.

### 1. Technical Requirements.

1.1. Parts of inside ( out side) lining should meet the requirements of present technical specifications, drawings and Technological document of manufacturing plant, approved in established order.

1.2. Parts of inside (out side) lining are manufactured by formation method in compression mould, interlayer - by method of extrusion or rolling.

Composite material, belting fabric, impregnated with varnish are used for manufacture of parts.

Note: AS per agreement between manufacturing plant and consumer plant, manufacture and supply of parts is allowed in the form of sheet blanks (plates) and interlayer in the form of sheet.

1.3. Surface, shape and geometric dimensions of parts should meet the requirements of drawing for part.

Unspecified radii of rounding off of corners, cuts in parts is allowed to perform with radius not exceeding 6 mm or chamfers not exceeding  $6 \times 45^\circ$ .

Radii of rounding of corners and edges in places of location of belting fabric and interlayer are allowed not more than 10 mm.

1.4. In the process of manufacturing of parts of inside (out side) lining, the followings are not allowed;

1.4.1. On the front side of part:

- Bulging of fabric with dimension of nominal circumference exceeding 30 mm. Total area of bulge should not be more than 15 % area of side of part,

- Absence of fabric exceeding 15 % of parts area in any place of parts surface;

- Absence of fabric exceeding 25 % area of side on parts with an area of less than  $0.1 \text{ m}^2$ .

- Folds of belting fabric having length more than 100mm and more than two in number on the part. Distance between the folds should not be checked. The fold, passing through the hole of part, is considered as one fold.

The depth of folds, out going on face or in hole, should not exceed 5 mm.

1.4.2. On the rear side of part:

• loose pressing in, peeling and bulging of interlayer from whole mass of material in any place of surface of part with an area exceeding 80 % of area of side of part;

- Absence of interlayer with area exceeding 15 % of area of parts side in any place of part surface. Absence of interlayer for more than 25 % area by the side of parts with an area less than  $0.06 \text{ m}^2$ ;

- fold formed by tightening of inter layer of whole mass of material, located on surface of part, out going on face or in hole, as well as passing through the hole.

a. with a depth exceeding 3mm in number more than three per part, length and distance between folds should not be checked;

b. with depth above 30 % thickness of part as per drawing, having a length above 200 mm, in quantity - more than three per part.

Bold, formed by tightening of interlayer and passing through the hole is considered as one fold.

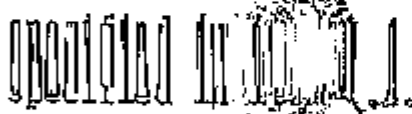
- Loose pressing of interlayer in holes having a depth more than  $1/3$  of thickness of part as per drawing.

Under cutting of loose pressed-in of interlayer in holes above  $1/3$  of thickness of part is allowed as per drawing and groove over the thickness of interlayer in places of undercutting.

1.4.3. Bulging of hole mass of material with dimension of

nominal circumference exceeding 30 mm, total area exceeding 15% of side area of part.

1.4.4. Stratification of material of part insitu. of butt-join of mould sheets with a depth exceeding 10 mm from chamfer



1.4.5. Cracks on the faces of parts with a depth exceeding 5 mm, with length exceeding 30 mm, more than two per part, cracks on rear and front sides of part, in places of connecting pieces with a depth of exceeding 5 mm, with a length exceeding 20 mm, more than 2 per part.

1.4.6. Air impurities on su faces of parts with nominal diameter more than 5 mm.

1.4.7. Deshelving of belting -fabric along the edges of part in holes and places of rupture.

Removal of deshelving is checked by cutting of fringe and gluing. In this case traces of glue are not allowed on the surfaces of parts.

1.5. In the process of manufacture of inside (outside) lining the followings are allowed.

1.5.1. Limit deviation as per thickness of part  $\pm 2$  mm.

1.5.2. Ruptures of belting-fabric and interlayer in places of abrupt change of profile of parts, and on the surfaces between holes or hole and face not more than two on side of part with length not more than 150mm, as well as on the border of fabric and of main material, interlayer of main material.

Rupture s of belting fabric on surfaces of parts of inside lining with belting fabric, pressed from two sides.

1.5.3. Absence of belting-fabric and inter layer on all

surfaces of part, located at angle of  $45-90^{\circ}$  to pressing plane.

1.5.4. Bulges of main material in the form of tightly pressed mass of different form, coming through of main material through the texture of belting-fabric.

Cuts of unpressed bulges of main material ~~or~~ for interlayer is allowed with a radius upto 12 mm or with chamfer  $12 \times 45^{\circ}$ .

1.5.5. Shrinkage on the surfaces of part within tolerance zone for thickness, traces from removable chisels with a depth not exceeding 5 mm, traces of soap emulsion.

1.5.6. Cavities, mis jointing in places, un covered with belting fabric and interlayer, with a depth in within the tolerance zone on the thickness of part, as well as on the faces of parts with a depth within the limits of interlayer.

1.5.7. Local cuts on faces of parts of inside (outside) lining with a depth not exceeding 20 mm, not more than 3 per part.

1.5.8. Light spots on the surfaces of parts.

1.5.9. Traces of materials, formed during transition from one material to another.

1.5.10. Displacement of interlayer on the face of parts of inside (outside) lining and in the holes, for exceptional ~~of~~ parts specially specified with drawing. ~~xxx~~.

1.5. Buckling of part, caused by difference in shrinkage of belting fabric, main material and interlayer are not considered as defectives.

1.7. Shade variation, colour of impregnated belting fabric is not regulated.

1.8. Parts of inside (outside) lining should be trimmed ~~far~~ from flash.

1.9. Parts, having the deviations from the requirements of present technical specifications, are subjected to repair. Magnitude and type of deviation, subjected to repair, as well as quantity and methods of their repair should be specified in instruction for repair of parts (inside) outside linings by the manufacturing plant, approved in a set order and agreed by military representative in this factory.

1.10. Marking of parts of inside (outside) lining should be as follows:

On each received part a label is pasted on rear side, in which followings are specified:

- No. of part as per drawing,
- Description of product;
- Number of bags;
- Date of manufacture;
- Number of technical specification;
- Name of press operator;
- Stamp of TID and military representative, certifying the coordination of parts with requirements of present technical specification.

1.11. Packing of parts of inside (outside) lining should be as follows:

1.11.1 Parts of inside (outside) lining are to be packed in dry wooden boxes. Walls of boxes should be covered with polyethylene film.

1.11.2. In each box from the parts packing sheet is enclosed, in which followings are specified;

- Description of part;
- Number of batch;
- Quantity of parts;
- Number of technical specification;
- Date of packing;
- Stamps of TID and military representative;

1.11.3. Each batch of parts of inside (outside) lining is accompanied by certificate, confirmed by TID and Military representative, certifying the conformity of parts with the requirements of present Technical specifications.

1.12. In separate cases, as per agreement between the consumer plant, the manufacturing plant and Military representatives in these plants, additional requirements for parts of inside (outside) lining and plates may be set, which are unspecified in present technical requirements and drawings.

## 2. SAFETY PRECAUTIONS.

2.1. Composite material and parts at room temperature and direct contact do not have harm effect on human organism.

2.2. Rooms of shops, in which composite material and part out of them are manufactured should be equipped with general ventilation (plenum or exhaust), working place (installation place of mixers)- local exhaust ventilation ensuring the content of injurious substances in concentrations not exceeding permissible limits. Temperature and air humidity is regulated with sanitary norms.

2.3. Composite material and parts made of them in case of bringing to naked flame catch fire without explosion and burn with smoking flame.

Working places should be equipped with fire fighting instructions, use of naked flame is prohibited.

For extinguishing, water, fire extinguisher chemical foams, inert gases, asbestos blankets are used.

### 3. ACCEPTANCE RULES

3.1. Parts of inside (outside) lining, received by department of technical inspection, are submitted for despatch to Military representative in batches with document, confirming their quality.

Quality of manufactured parts for same article, submitted for despatch as per single notification is taken as a batch of inside (outside) lining.

3.2. Each part of inside lining is subjected to inspection as per appearance in accordance with requirements of present technical specifications.

3.3. Each two hundred part, for each description is subjected to inspection in accordance with drawing. Results of inspection are formed by record of inspection, which is signed by TID and military representative.

3.4. Parts of inside(outside) lining, which are not meeting the requirements of present technical specifications are rejected.

3.5. Start up of new, repaired and modernised of mould in production is carried out as per results of assessment in accordance with present technical specifications and drawings of three parts, manufactured in these moulds, after their operation for not less than 48 hours.

Results of assessment are formed as act, which should be signed by chief engineer, TID incharge and military represen-

tative in the manufacturing plant of parts of inside (out side) lining. Decision about for allowance of mould in production should be specified in the act.

#### 4. INSPECTION METHODS.

4.1. Parts of inside(outside) lining are subjected to complete inspection by appearance and inspections of dimensions as per thickness in accordance with the requirements of present technical specifications.

4.1.1. Inspection of thickness of parts of inside(outside) lining is carried out with standard measuring tools(ruler, vernier caliper, feeler gauge and others) ~~max~~ within one day after their manufacture.

4.1.2. Measurement of thickness of part is carried out in 4 - 5 points as per perimeter of part at a distance of minimum 10 mm from edge of the part value of any measurements should be within the limits of requirements of drawing and of present technical specifications.

4.2. Each part is subjected to inspect by appearance in accordance with requirements of present technical specification.

4.2.1. Inspection by appearance is carried out visually, without using magnifying equipments. The deviations, values of which are specified in section I of present technical specifications, are measured with standard measuring tools (ruler, vernier caliper, feeler gauge etc.,). The depth of misjointing cracks and cuts are measured by feeler gauge with a thickness of 0.08mm.

#### 5. TRANSPORTATION AND STORAGE.

5.1. Transportation of parts of inside (outside) lining is carried out in packed form by any type of transportation.

5.2. Parts of inside (outside) lining are stored on racks in clean, dry store rooms at a temperature not above plus 40°C in conditions, excluding falling of direct sun light.

#### 6. GUARANTEE OF SUPPLIER

6.1. Parts of inside (outside) lining should be received by TID of manufacturing plant and Military representative in this plant.

6.2. If the conditions of operation, transportation and storage are observed, the manufacturing plant guarantees the compliance of the parts of inside(outside) lining with the requirements of present technical specifications.

Guarantee period starts ~~for~~ from the day of acceptance of military representative for guarantee period of article life.

NOTIFICATION OF AMENDMENTS OF SPECIFICATIONS

The following Corrections/Amendments are now required to be carried out in the documents as below:-

Documents Details : ITG-19-619-81  
 OPPH Regn.No. : I - 2929

Details of Amendments:-

<u>Sl.No.</u>	<u>Details</u>
1.	Ref : Page 2, 2nd line Delete : "Supere" is" Add : " <u>REPERCEDES</u> "
2.	Ref : Page 3, 1st line, 3rd word, Add : " " at the end of "Technica" Read as : " <u>Electrical</u> " Delete : "s" from 3rd word "Defines" Read as : " <u>Define</u> "
3.	Ref : Page 3, 1st para, 2nd line, 3rd word Delete : "s" from the end of "relates" Read as : " <u>relate</u> "
4.	Ref : Page 3, 1st para, 2nd line, 6th word Delete : "armour" Add : " <u>Armour</u> "
5.	Ref : Page 1 2nd line, Delete : " " after "-04-" Add : " <u> " to read as "24/08/57 IT-04-T 401262"</u>
6.	Ref : Page 3, 2nd para, 3rd line, after 3rd word, a) Insert : " " in between words description and parts Read as : " <u>Description of parts</u> " b) Delete : "s" from the end of the last word "Parts" Read as : " <u>PARTS</u> "
7.	Ref : Page (1) 3, para 2, 6th line, last word, Delete : "e" from the end of word <u>part</u> Read as : " <u>part</u> "
8.	Ref : Page 3, 2nd para, 4th line, 5th word, Delete : "s" from the end of word "Parts" Read as : " <u>Parts</u> "

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W. G. G. G.*

- (9)
- | <u>Sl.No.</u> |     | <u>Details</u>   |
|---------------|-----|--|
| 9.            | Ref | 1 Page 3, 3rd para, 5th line, 6th word,<br>Delete : 's' from the word 'Parts'<br>Read as : <u>'Part'</u>   |
| 10.           | Ref | 1 Page 3, 4th para, at the end of sentence<br>2 Divide para from word 'Example'  |
| 11.           | Ref | 1 Page 3, 4th para, 2nd line, 5th word,<br>Delete : 's' from word 'parts'<br>Read as : <u>'Part'</u>   |
| 12.           | Ref | 1 Page 3, 4th para, 3rd line, last word,<br>Add : 's' at the end of word 'follow'<br>Read as : <u>'follows'</u>  |
| 13.           | Ref | 1 Page 3, 4th para, 5th line, after 4th word,<br>Insert : <del>add</del> 'of' 1 between 'Designation' and 'Parts'<br>Read as : <u>'Designation of parts'</u> |
| 14.           | Ref | 1 Page 4, Item 1.3, 1st line, 4th word,<br>Add : 'al' at the end of word 'Geometric'<br>Read as : <u>'Geometrical'</u>                                       |
| 15.           | Ref | 1 Page 4, Item 1.3, 2nd para, 3rd line,<br>Delete : 'Chamfers'<br>Read as : <u>'Chamfers'</u>  |
| 16.           | Ref | 1 Page 4, Item 1.3, 3rd para, 1st line,<br>Insert : 'off' in between words 'rounding' and 'of'<br>Read as : <u>'Rounding off of'</u>                         |
| 17.           | Ref | 1 Page 4, Item 1.4, 2nd line,<br>Delete : 'followings are '<br>Add : <u>'following is'</u>   |
| 18.           | Ref | 1 Page 4, Item 1.4, 5th line, at the end,<br>Insert : 'side' in between 'Parts' and 'area'<br>Read as : <u>'Parts side area'</u>                             |
| 19.           | Ref | 1 Page 4, Item 1.4.1, last line, 4th word,<br>a) Delete : 'of'<br>Add : 'he'<br>b) Add : 's' at the end of fifth word 'Part'<br>Read as : <u>'Parts'</u>     |
| 20.           | Ref | 1 Page 5, Item 1.5.2, 5th line, 1st word in the<br>beginning<br>2 make small letter of 'A' and read as <u>'absent'</u>                                       |

(3)

<u>Sl. No.</u>		<u>Details</u>
21.	Ref Insert Read as	Page 5, Item 1.3.2, b) 1st line after 4th word 'of' in between '10%' and 'thickness' '30% of thickness'
22.	Ref Delete Add	Page 5, Item 1.4.3 at the end. 'dimension' ' <u>Diameter</u> '
23.	Ref Delete Add	Page 5, Item 1.4.4, 1st word, 'Stratification' ' <u>Stratification</u> '
24.	Ref Delete Read as	Page 5, item 1.4.5, 1st line, 6th word, 's' from the end of 'Parts' ' <u>Part</u> '
25.	Ref Delete Add	Page 5, item 1.4.5, 3rd line, 4th word, 'and' ' <u>and</u> '
26.	Ref Delete	Page 5, item 1.4.5, 4th line, 6th word, 'of' to be read as 'with depth exceeding'
27.	Ref	Page 5, item 1.4.5, last line last word, Separate words 'per' and 'Part' to read as 'per Part'
28.	Ref Add Read as	Page 5, Item 1.4.7, last word 1st para, 's' at the end of word 'rupture' ' <u>Ruptures</u> '
29.	Ref Delete	Page 5, Item 1.5, 2nd line, 3rd & 4th words 's' from the end of word 'following' and 'are' after 'following' and Add 'is' to read as 'following is allowed'
30.	Ref Delete Add	Page 5, Item 1.5, 2nd line, 7th word, 'Parts' ' <u>Parts</u> '
31.	Ref	Page 5, item 1.5, 2, 4th line, 10th word, Separate 'well' and 'as' from 'wells' to be read as 'well as'
32.	Ref Delete Add	Page 5, Item 1.5.2, 5th line, 9th word, 'of' 'and' to read as 'interlayer and well'
33.	Ref Read as	Page 7, 1st line, 6th word, Revised at an angle of 13-50°

Sl.No.      Details

- 34.    Ref        : Page 7, Item 1.5.4, 2nd line, 8th word,  
Delete     : 'of'  
Read as    : 'Coming through main material'
  
- 35.    Ref        : Page 7, Item 1.5.6, 1st word  
Delete     : 'cavities'  
Add        : 'Cavities'
  
- 36.    Ref        : Page 7, Item 1.5.6, 2nd line, 8th word  
Delete     : 'in'  
Read as    : 'with a depth within the'
  
- 37.    Ref        : Page 7, Item 1.5.10, 2nd line, last word  
Delete     : 'of'  
Read as    : 'For exceptional parts'
  
- 38.    Ref        : Page 7, Item 1.8, 1st line, 6th word  
             : Separate words 'should be' and read as  
             : 'should be'
  
- 39.    Ref        : Page 8, Item 1.9, 5th line, 3rd word,  
Add        : 's' at the end of word 'Instructions' to be  
             : read as 'Instructions'
  
- 40.    Ref        : Page 8, Item 1.10, 2nd line, last word,  
Add        : 's' at the end of word 'follow'  
Read as    : 'Follows'
  
- 41.    Ref        : Page 8 Item 1.10, 4th line, 1st & 2nd words  
Delete     : 's' from 'followings' and Delete 'are' and  
             : Add 'is' to read as 'Following is specified'
  
- 42.    Ref        : page No.9, Item 1.11.3, 3rd line, 1st word  
Add        : 'S' at the end of 'representative'  
             : To read as "representatives".
  
- 43.    Ref        : page No.9, Item 2.2, 3rd line, at the end  
Add        : 'S' at the end of word "Place"  
             : To read as "Places".
  
- 44.    Ref        : page No.10, 1st line, last word,  
Delete     : 'ighting'  
Add        : 'fighting' To read as 'fire fighting'
  
- 45.    Ref        : page No.10, 2nd line, 4th word,  
Delete     : 'maked'  
Add        : 'maked' - To read as 'maked flame'

Sl.No.    Details

46. Ref     : page 10, Item 3.1, 2nd para, 1st word  
Delete : 'Quality'  
Add     : 'Quantity' + To read as "Quantity of manufactured"
47. Ref     : page 10, Item 3.3, 3rd word  
Add     : 'th' at the end of 'Hundred' To read as 'Hundredth'
48. Ref     : page 10, Item 3.5, first line, 8th word,  
Delete : ~~z~~ 'of' - To read as 'modernised mould'
49. Ref     : page 11, 2nd line, 2nd sentence  
  
Divide paragaph from sentence beginning with  
"Decision about"
50. Ref     : page 11, item 4.2.1, last word,  
seperate "mm" from "0.08mm"  
To read as "0.08mm".
51. Ref     : page 12, Item 5.2, second line, 4th word,  
Delete : "Sotre"  
Add     : "Store" - To read as "Dry store rooms".

  
AWM/DS

'Thro AWM/PDO'

AF/PDO

✓ Copy to: CI, ICV.