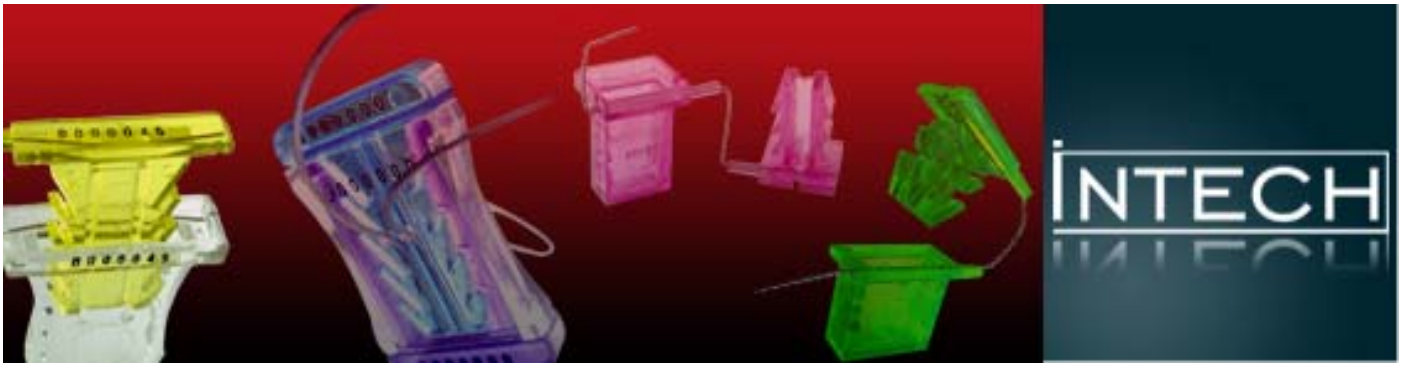

POLYCARBONATE PLASTIC SEAL.SIZE 18 X 14 X 7 mm.

Dual Lock Small

SPECIFICATIONS | SPECIAL FEATURES | DIAGRAM | BENEFITS
Installation | Images | ERDA

SPECIFICATIONS

SCOPE:
The Specification covers the Design, manufacture, testing at manufacturers works and supplying, delivery of temper proof polycarbonate plastic seals for sealing electrical installations vlz: Meter body of energy meters. Terminal cover of energy meters and Metal Box, and for other accounting purpose. The size of the seal shall be 18 X 14 X 7mm. these seals shall be used for LT/HT Industrial Consumers and in theft prone areas.

The Polycarbonate seals will be conformed to the following specification as under:

1. Material of Plastic Seal:
The raw material used for polycarbonate plastic seals shall be of M/s. Dow Caller Ltd. Switzerland (Grade 201-15) M/s. GE Plastic, Singapore (Grade 143R), M/s. Du Pont, Japan (Grade LV-11, U.V. Stabilize) or any other equivalent manufacturer having similar material properties as under:

Sr. No.	Item	Polycarbonate
1	Melting temperature	280° C to 295° C
2	Use	Engineering
3	Softness	Hard
4	Durability	Weather Effect resistance
5	Transparency	Fully transparent (long time transparency)

2. Colour of seal.
The seals will be colorless, transparent (See through) Type, which shall give complete visualization of its fixing mechanism and shall show clear indication if tempered. Also seals can be available in different colour like Red, Blue, Yellow, Green, and Orange etc.

3. Design and Construction of seal.

a. Design:
The Seal will be Anchor type temper evident with double locking system as per drawing no. AP – 05 & 06 attached with the specification only.

b. Size of the Seal:
The size of the female part of the seal shall be as under:

1. Size: 18 x 14 x 7 mm ± 0.5 mm
2. Size of the hole of female part: The size of the hole shown in the drawing should be sufficient to insert seal wire, but in no case, more than 1.0 mm ± 0.1 mm.
3. Wall thickness should be 0.8 mm (No negative tolerance).

c. Serial No. of the seal:
Non repeat seven digits Sr. Nos. with code no. on the seal shall be embossed and it shall not be screen printed and it should be provided on male and female portion at the place mentioned in the drawing i.e. on the top in male part and on the side in female part. Please note that Sr. No. of seal shall not be embossed after the seal is manufactured. The size of the digit shall be 1.5 X 2.5 mm (W X H).

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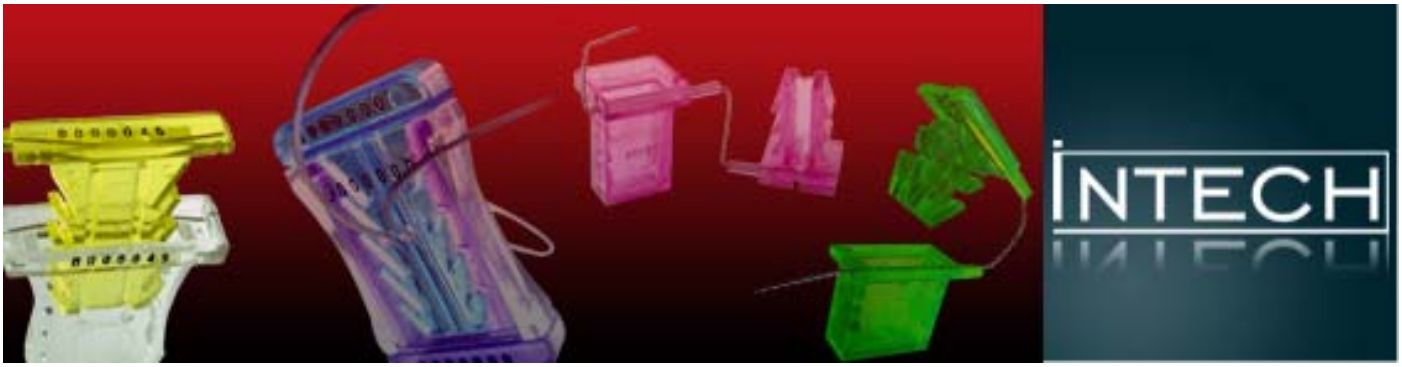

c-2 also seals have special features like neon text coding on anchor part of seals, and should have facility to have UV numbering on seals(i.e. same serial number of seals should be UV visible) this numbers are visible only by ultra violet light.

d. Monogram:

The seal have monogram of Company logo in 8 mm circle on front side and month& year in figure on backside in 8 mm circle.

e. Seal wire.

The non corrosive non magnetic as per is 304 stainless steel twisted wire (26 SWG) shall be used as under. The seal wire shall not have affect of magnet. i.e. it should not attract to magnet.

1. On seal open wire stainless steel twisted of 26 SWG. Of 160 mm (Or as per client requirement) Length and 65 mm + 5.0 mm. Molded wire as shown in the drawing.

The diameter of each individual strand wire shall be 0.45 mm (approx) (26 SWG) and over all diameters of seal wire shall be 0.9 mm $\pm$ 0.05 mm, so that it can easily insert into the female portion where the diameter of the hole shall be 1.0mm $\pm$ 0.1mm.

2. The seal wire used for the above size of seals shall be inbuilt in connecting male and female part of the seal as shown in the drawing and as per the above dimensions. The application of the seal wire is to insert seal wire and through the hole via female part and insert the male part into female part by applying thumb pressures to lock the seal.

4. General Construction:-

The seal shall be designed for a single use only and if

Tempered with the help of puller, knife or any other sharp instruments, the seal shall be damaged and due to its see through property. The sign internal of tempering shall be easily detected. Also once opened, it cannot be re-used. The Seal shall be made in such a way that, it can be easily locked with the help of finger and thumb pressing and no tools shall be required to close the seal in the laboratory

Or at site. After inserting the seal wire through female pare, the cap of the male part shall be fitted in the female part in such a way that it should not leave any space to avoid insertion of any sharp tools for opening of seal body of the female part in hot or cold condition. The seal shall have also the following features.

a) Temper resistance and reliable.
b) Environmentally safe as it does not contain any lead.
c) Withstand long-term exposure to direct sunlight.
d) Tools not required for Installation.
e) Transparent and see through body reveals
f) Heat resistance.
g) Chemical resistance

5. TEST

The seal shall be tested at the manufacturer's works for the following tests:

1. **Visual Check:** I. e. workmanship and other features as mentioned above.
2. **Dimensional Check:** as per drawing.
3. **Boiling water test:** The seal shall be emerged in the boiling water for more than one hour and there shall not be any affect on the seal and the seal shall remain in tact condition. Even, with the help of any sharp instrument, pulling with puller i.e. by applying mechanical force, the seal shall not come out from the female part. In case, it comes out, the same shall damage the seal, so that it can not be re-used.
4. **Pulled out test:** After locking the seal, if the seal is pulled with mechanical force with the help of puller or any other instrument, sharp instrument etc. at normal condition, the seal shall not be unlocked without any damage.
5. **Seal wire:** In case, if someone tries to pull the seal wire and in any of the test mentioned at Sr. No. 3, 4 & 5 in that case the male / female portion of the seal should be damaged and the same can be seen visually being a transparent one.

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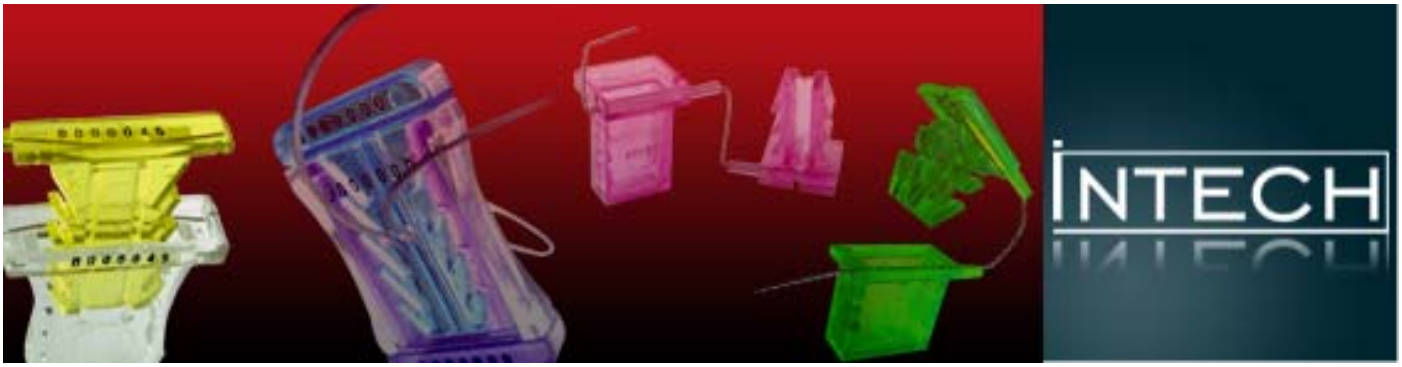

6. **Chemical Test:** The seal shall be kept in the concentrated acid for minimum one hour, the same shall remain in tact condition and if try to unlock the seal, the same shall be damaged.

   In short, if the seal is tested for any of the above tests, in no condition the male and female part shall be separated without affecting damaging the seal. In case, if they are separated, the seal shall have sufficient temper evident. Also, if seal wire is pulled out from the seal in any of the above tests, it shall not come out from the seal without damaging seal.
7. **Temperature withstand test:** The seal withstand 147 ^{o} C for one hour without any damage of deformation.
8. **Specific Gravity:** Specific Gravity at 27 ^{o} C is 1.20.
9. **Melting temperature:** Melting temperature of the material is 280^{o} C to 295^{o} C.

6. Sampling criteria:-

Minimum 5 samples of seals shall be selected at random as per IS 4905 for testing purpose from the each lot. The seals used in testing shall be destroyed in the presence of inspecting officer.

7. Supply Schedule:-

We will supply the seals as per delivery schedule of the client after inspections of the same. Please note that the seal shall be manufactured only after receipt of the conformed purchase order and as per the delivery schedule unless specifically instructed by the authority.

8. Guarantee:-

The seal will be guaranteed for a minimum period of two years. In case, if any defect in design and manufacturing is noticed within the guarantee period the seals shall be replaced within one month free of cost.

9. Special Feature:-

The seals are to be manufactures as per enclosed drawing only. The size of the seal, type and dimension of the seal shall be strictly as per the drawing only.

10. Packing and forwarding:-

Our company are responsible for suitable packing of seal as per client requirements and we are supply each 100 seals in chronological order i.e. arranging in serially , tide with the steel wire forming a loop and the same shall be packed in polythene bag with labels furnishing sr. nos. of seal, packed in corrugated box.

11. Sample:-

The sample of seals with logo of firm on front side & month & year of manufacturing on backside of the female part of the seal. The seals shall also be provided sr. no. of 000001 to 000025 on top of the male part of the seal as well as side of the female part of the seal as shown in the drawing No. AP – 05, 06.

12. Stage inspection:-

If desired by the client, client will arrange stage inspection for the material used for the manufacturing of seal and process of manufacturing.

13. Pre qualification requirements:-

(1) Manufacturer should have annual turn over of Rs. 1.5 crore in any last three financial years.
(2) Manufacturer should have ISO 9001 or 14000 or above
(3) Manufacturer should have supplied minimum 50 lacks seals in last financial years
(4) Seals should be supplied by authorized distributors only.

Test certificate of ERDA should be attached along with the tender.

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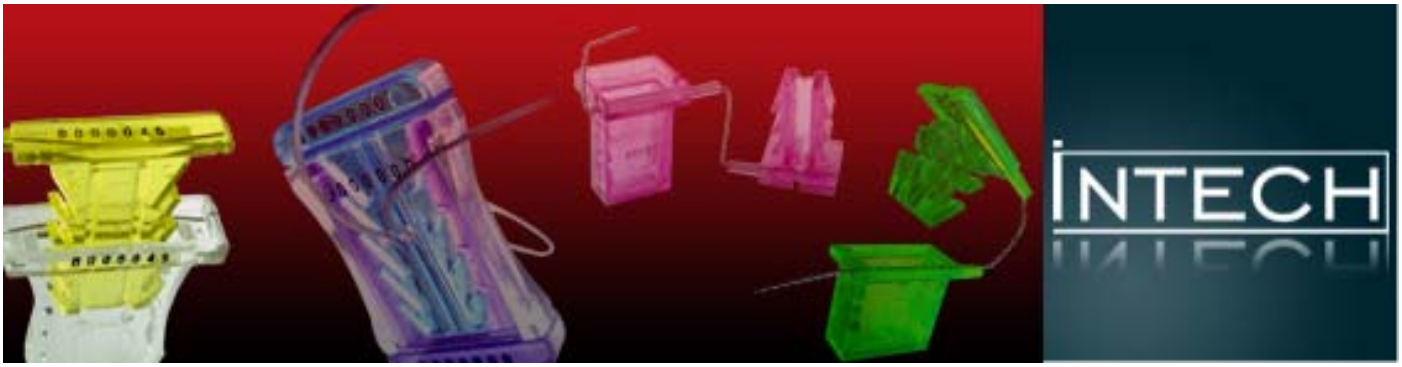

SPECIFICATIONS | SPECIAL FEATURES | DIAGRAM | BENEFITS
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SPECIAL FEATURES

1. Dual Lock Mechanism for faster Locking
2. Neno text confidential coding on seals.
3. Special colour code (weather resistance) in same seals.
4. Ultra violet numbering visible only by UV light torch.
5. Itching type unique numbering on two position of seals.
6. High quality sealing wire.
7. Seals serial number has psychological effect (German technology)
8. Bar Coding possibility.
9. Laser Numbering Possibility

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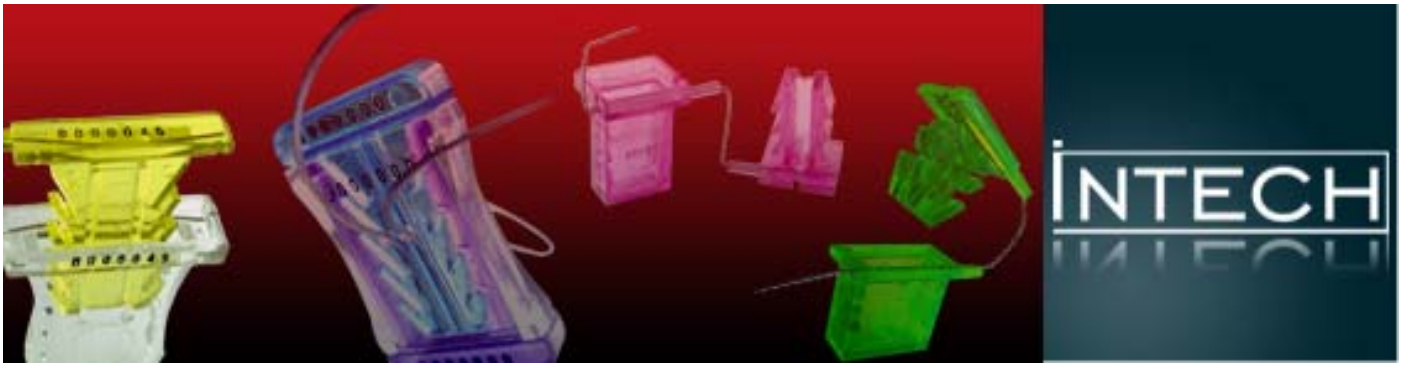

SPECIFICATIONS | SPECIAL FEATURES | DIAGRAM | BENEFITS
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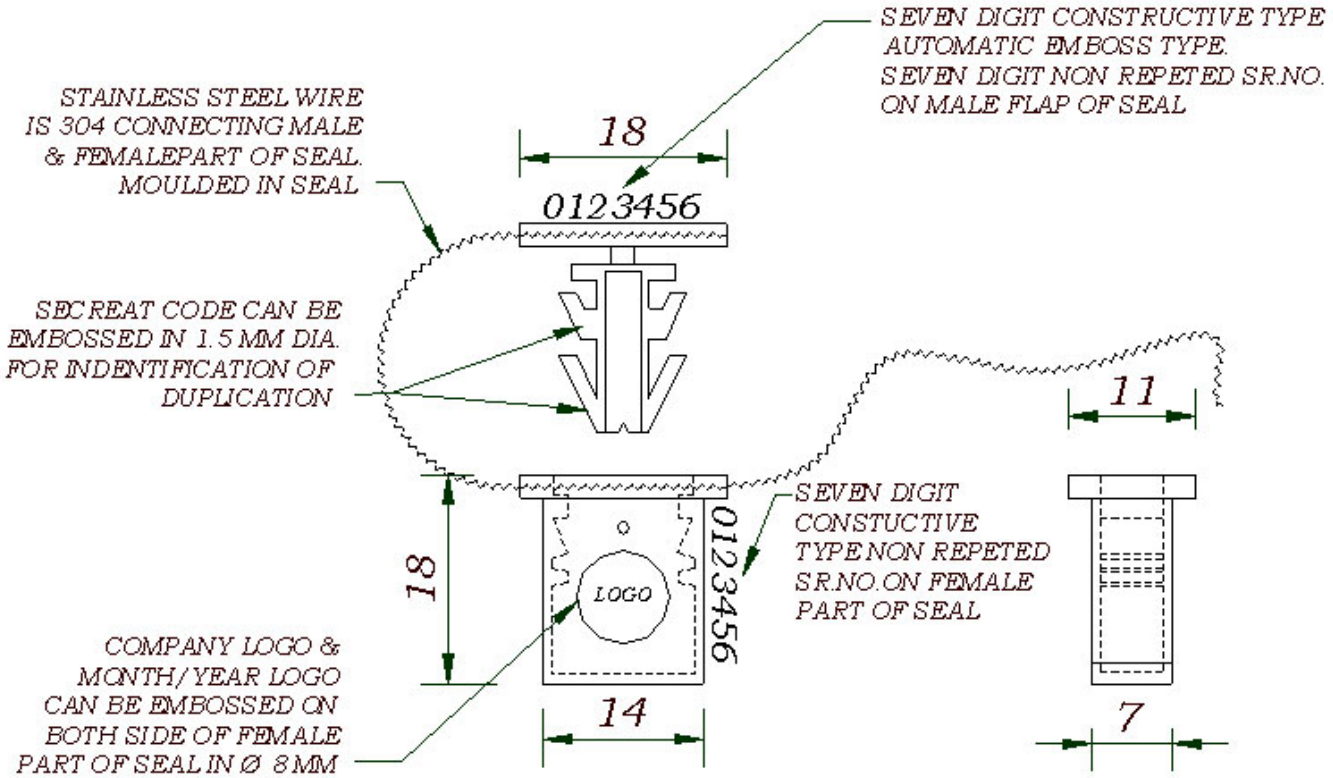
DIAGRAM



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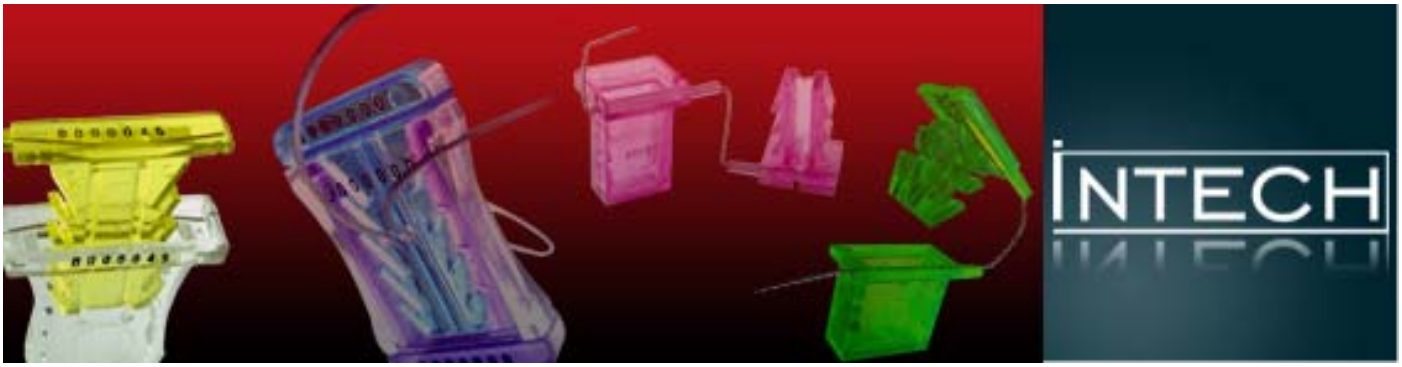

SPECIFICATIONS | SPECIAL FEATURES | DIAGRAM | BENEFITS
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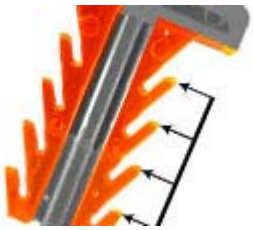
Benefits

Benefits (With Figure as in Our Web SIte)

1. Quadra locking mechanism first time in India.



2. Nano text confidential coding on seals.

3. Special two colour code (weather resistance) in same seals.

4. Possible Ultra violet numbering visible only by UV light torch.

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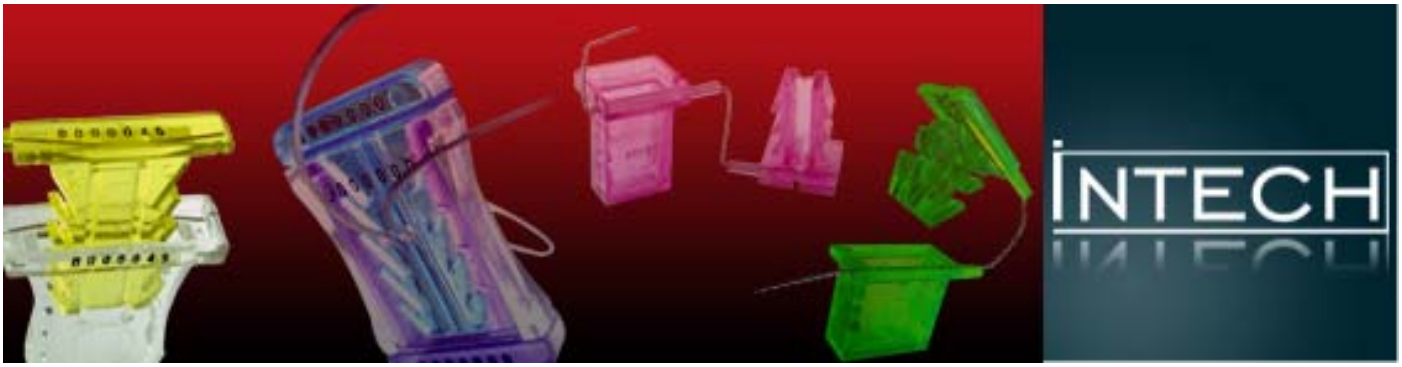
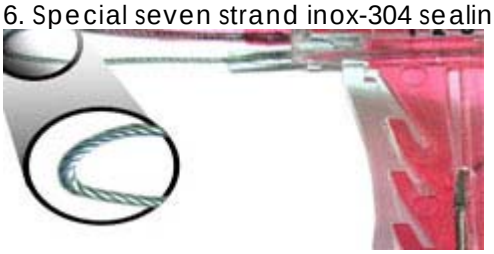
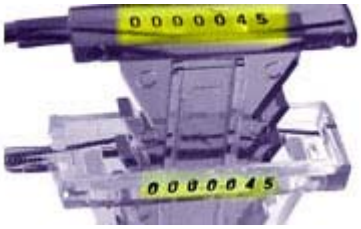


5. Itching type unique numbering on three position of seals.

6. Special seven strand inox-304 sealing wire.



7. Seals serial number has psychological effect (German technology)



8.Original Company Logo And Company name in as small as 8 mm size possible.

9.Wide Temperature range for using at hogh temperatures as well.

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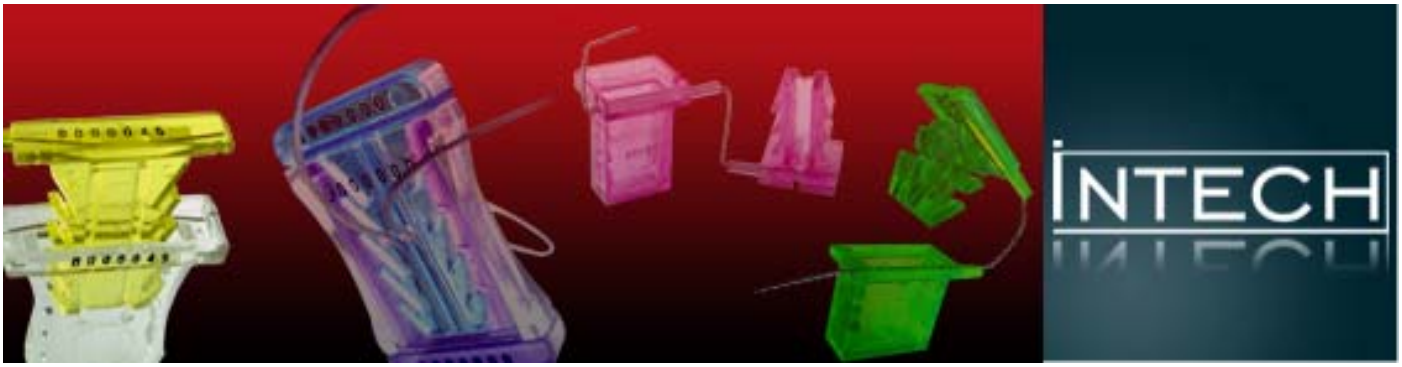

10.TRansparent Material for Better verification

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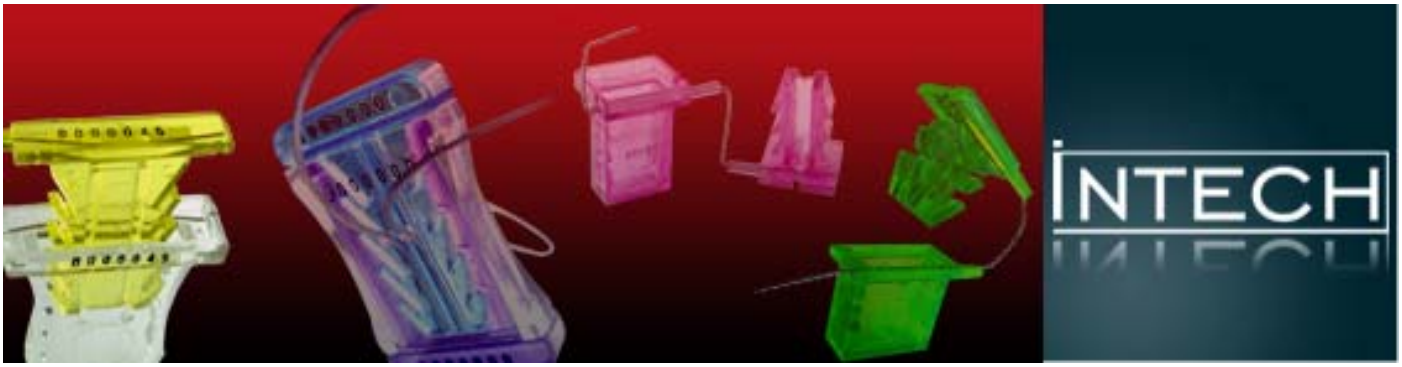

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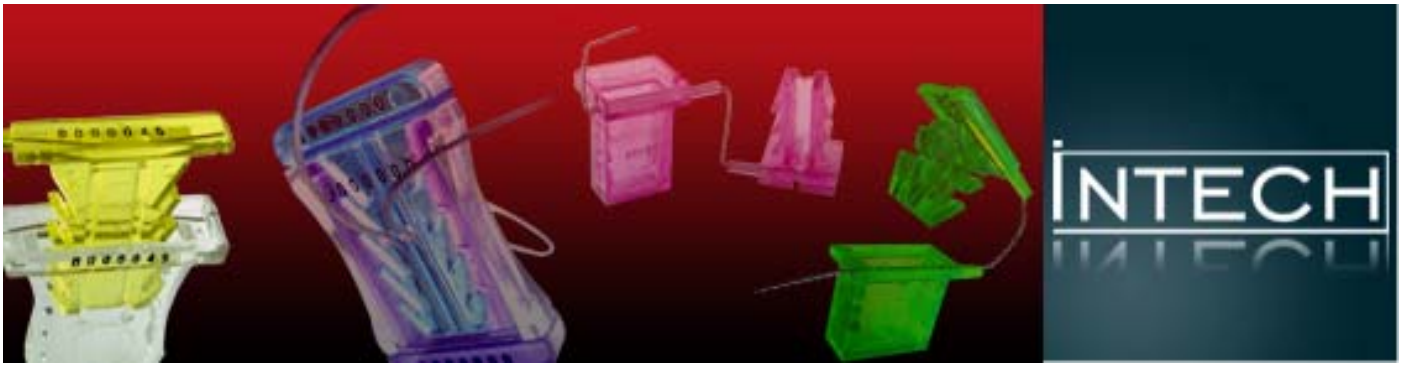

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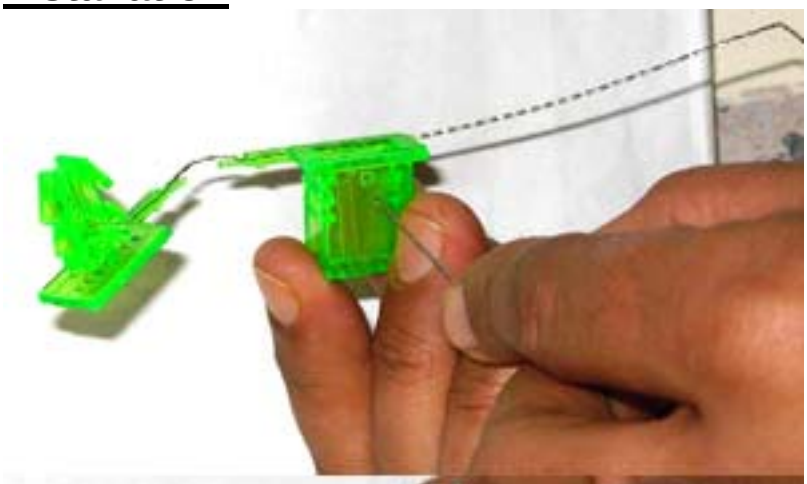

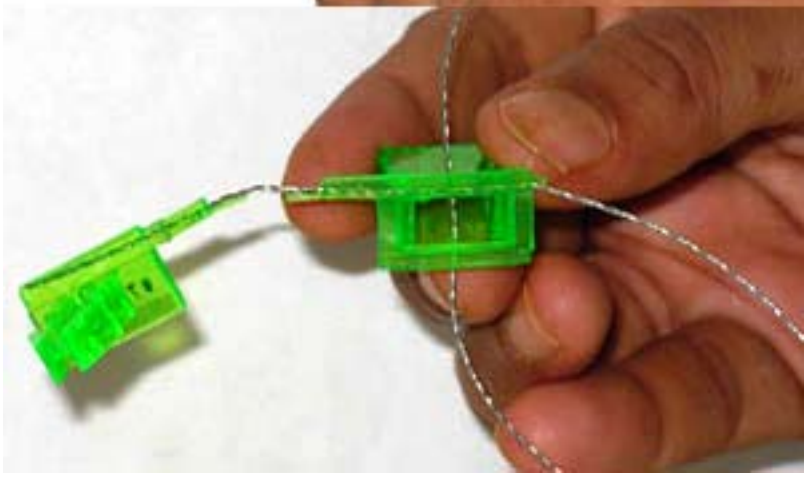

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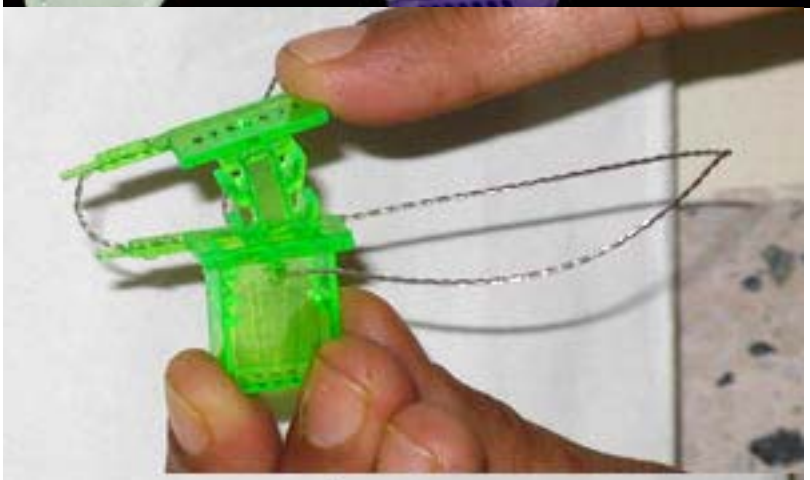

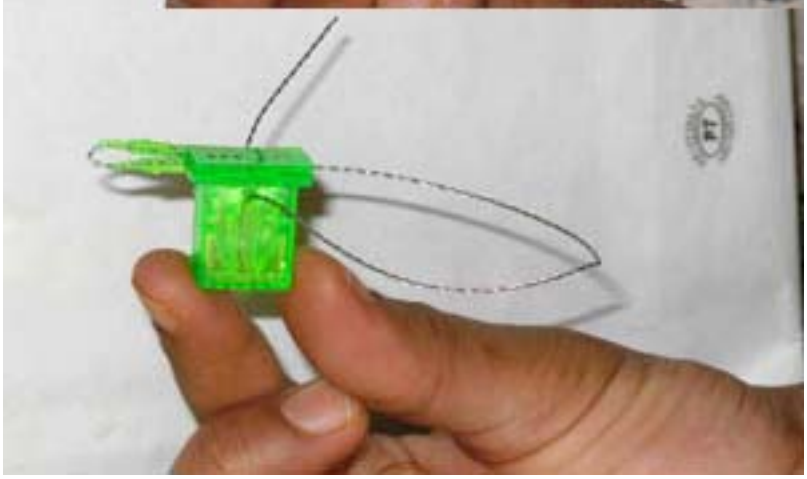

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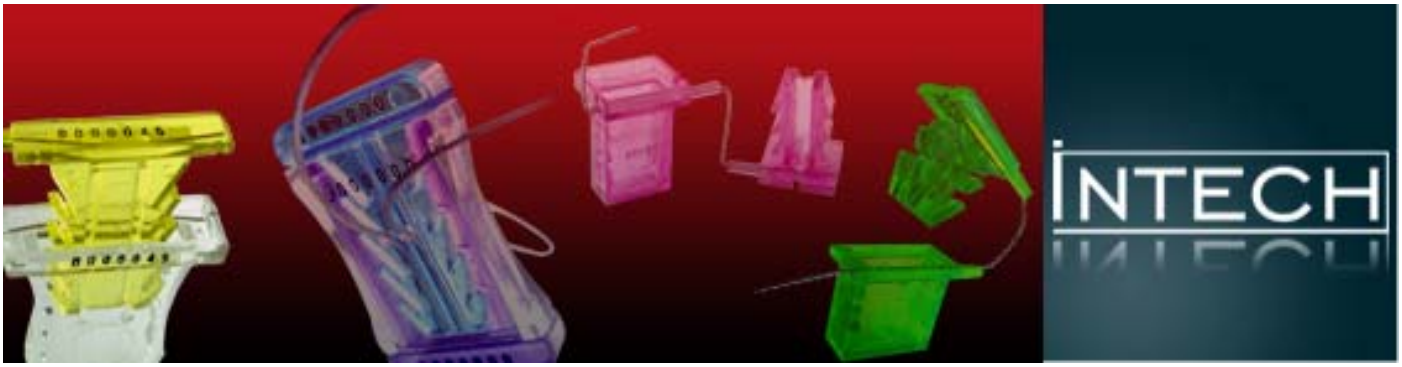

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ERDA

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TEST REPORT

SHEET 1 of 2

NAME & ADDRESS OF CUSTOMER		
M/s Patel Brothers 266/3,Phase II, G.I.D.C., Wadhwan City- 363 035 Dist : Surendranagar	REPORT No. DATE CUSTOMER REF. No DATED DATE OF SAMPLE RECEIPT	: I.06/11/654-2 : 28-07-05 : Nil : 28-06-05 DATES OF TESTING
	14-07-05	25-07-05 – 28-07-05

SAMPLE DESCRIPTION	IDENTIFICATION No.
Poly Carbonate Plastic seal Size: 18 mm x 14 mm x 7 mm +/-0.5 mm	ERDA Report W.O. No IPOLWO0032215-2

TEST DETAILS	TEST SPECIFICATION NO
1. Boiling water test	Clients Specification
2. Pulled out test	"
3. Chemical test	"
4. Melting point by DSC	ASTM D 3418 – 1999

PREPARED BY CHECKED BY APPROVED BY

NOTE:
1. This report relates only to the particular sample received for testing in good condition at ERDA.
2. This report cannot be reproduced in part under any circumstances.
3. Publication of this report requires prior permission in writing from Director, ERDA.
4. Only the tests asked for by the party have been carried out

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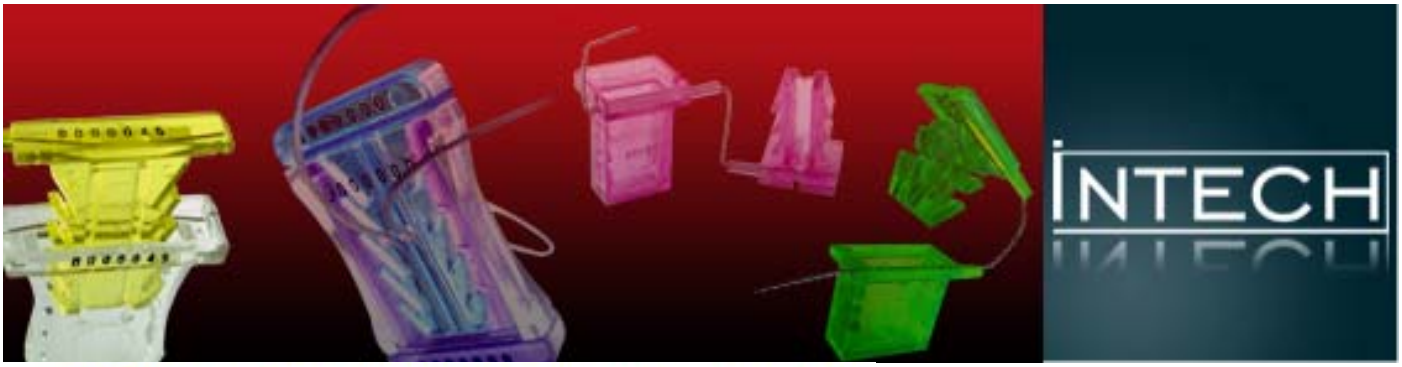

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REPORT NO. I.06/11/654-2 DATE: 28-07-05 SHEET 2 of 2

Sr. No	Cl no	Test particulars	Requirement as per specification	Obtained value	Remarks
1.	--	Boiling water test			
		- The seal after locking was immersed in boiling water for more than one hour	Seal shall remain intact and there shall not any affect on the seal and the seal shall not be pulled out by force or by applying any sharp tool with out causing damage to seal.	The seal was intact and there was no affect on the seal. Seal showed damage when pulled out by force or by applying sharp tool.	Conforms
			If seal wire is pulled out, male/female portion shall be damaged and shall be seen visually.	Crack was observed in male part of the seal.	Conforms
2.	--	Pull out test (in as received condition)	After locking, seal shall not be pulled out by force or by applying any sharp tool without causing damage to seal.	The seal showed damage when pulled out by force or by applying sharp tool.	Conforms
3.	--	Chemical test			
		- The seal after locking was immersed in con. Hydrochloric acid for one hour.	The seal shall not be pulled out by force or by applying any sharp tool without causing damage to seal.	The seal was damaged when pulled out by force or by applying sharp tool.	Conforms
			If seal wire is pulled out by force the male/female portion shall be damaged and shall be seen visually.	Crack was observed in male part of the seal.	Conforms
4.	--	Melting point by DSC, °C	280 -- 295	288	Conforms

Note: Due to the absence of a sharp melting peak mid point of endotherm was reported as melting point.

No. 136662

PREPARED BY

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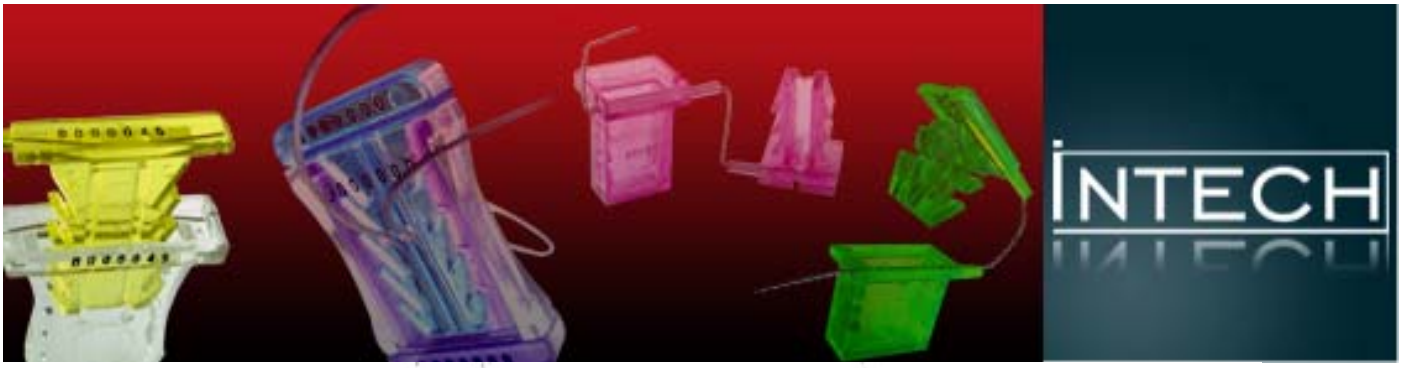

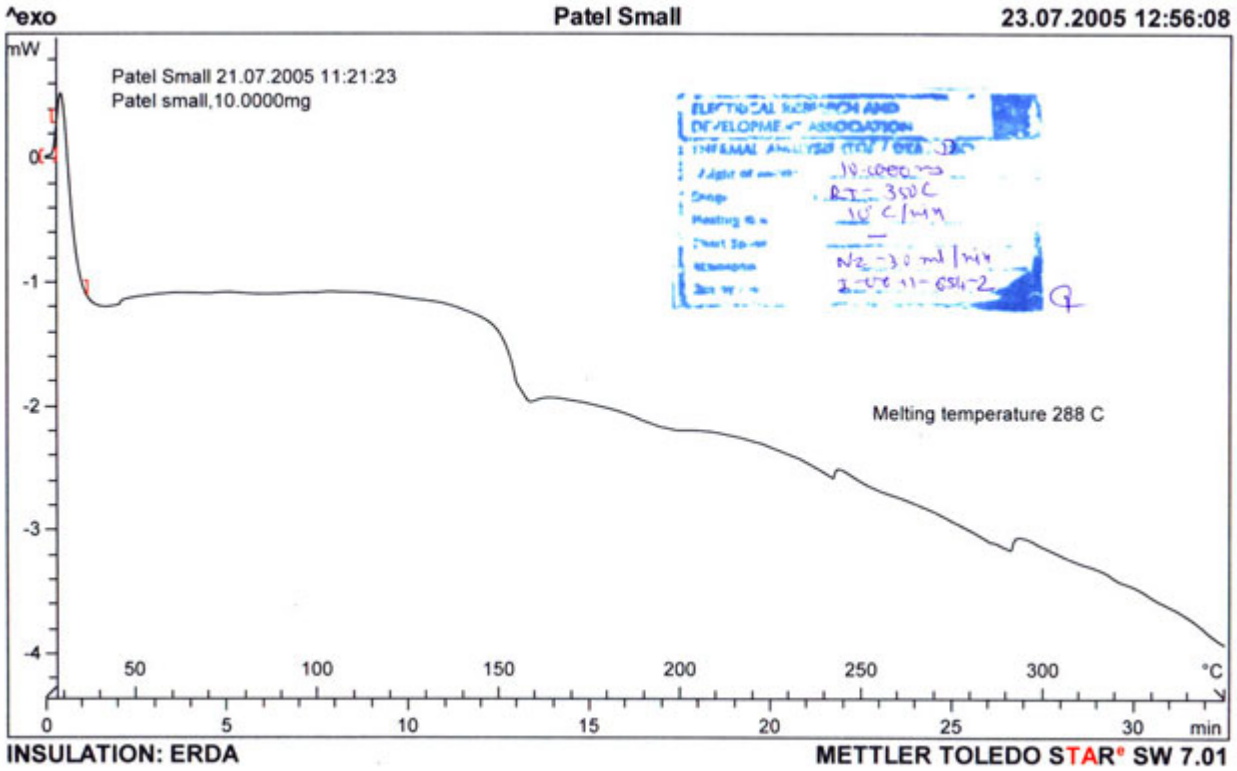

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