

**Reasoned Document for revision in the provisions of IRS Specification For Fusion Welding of Rails By Alumino- Thermic
Process IRS:T-19-2021**

S. No	Clause No.	Existing Provisions	Comments of Stake holders	Proposed Provisions (Addition is made in red Ink.) (Deletion is made by striking off in Red ink)	Justification for amendment
1	2.4	All the provisions contained in RDSO's ISO procedures laid down in Document No. QO-D-8.1-11 dated 01.07.2020, (latest Version) Version No: 1.3, (titled "Vendor-Changes in approved status") and subsequent versions/amendments thereof, shall be binding and applicable on the successful vendor/vendors in the contracts floated by Railways to maintain quality of products supplied to Railways.	_____	All the provisions contained in RDSO's ISO procedures laid down in Document No. QO-D-8.1-11 dated—01.07.2020, (latest Version) Version No: 1.3, (titled "Vendor-Changes in approved status") and subsequent versions/amendments thereof, shall be binding and applicable on the successful vendor/vendors in the contracts floated by Railways to maintain quality of products supplied to Railways.	Latest ISO revision shall be used
2	3.2	Every portion shall be packed in a moisture proof bag of Polyethylene to IS:9738, "Indian Standard Specification for Polyethylene bags for general purposes" Grade HM HDPE of 150-micron thickness which shall be sealed so as to make it airtight. The Polyethylene bag shall	1. M/s Amiable Impex, Mumbai Primary Packaging: Suggests LDPE or HDPE with at least 200 microns thickness. Performance Requirement: Packaging must pass drop tests to prevent rupture. Secondary Packaging: Proposes multi-layer paper bags with moisture-resistant lining. Advantages: Biodegradable, eco-friendly, customizable for handling needs.	Every portion shall be packed in a moisture proof bag of polyethylene to IS:9738, "Indian Standard Specification for polyethylene bags for general purposes" Grade HM HDPE of minimum 150-micron thickness, which shall be sealed so as to make it airtight. The polyethylene bag shall be packed in a heavy duty bag made of new cloth to IS: 187 or any other superior packaging approved by RDSO. The	To prevent moisture & increase in service life of portion and easy identification in field

		<p>then be packed in a heavy duty bag made of New cloth to IS:187 or any other superior packaging approved by RDSO. The open end of this packaging shall be stitched and sealed in such a manner that there is no access to the 'portion' without damaging the bag / packaging or breaking its seal.</p>	<p>2. M/s ORA, Kanpur</p> <p>Opposition to Changes: Believes the proposed packaging is unnecessary, costly, and environmentally harmful. Current System: Argues that the existing HDPE bag system is effective, widely accepted, and sustainable. Alternative Approach: Advocates for cost-efficient and eco- friendly packaging without significant changes.</p> <p>3. M/s The India Thermit Corporation Ltd., Kanpur</p> <p>Cost Concerns: PVC bucket packaging increases costs significantly per portion and mould pair. Handling & Transportation: Carton boxes are easier to manage and transport compared to PVC buckets. Storage Space: PVC buckets require more storage space. Environmental Impact: PVC bucket usage is not eco-friendly.</p> <p>Recommendation: Suggests using PVC buckets only for portion bags</p> <p>4. Raybon Metals Pvt Ltd, Bilaspur</p> <p>Proposed Packing System: Portions packed in polythene and cloth bags per IRS T-19 standards.</p>	<p>open end of this packaging shall be stitched and sealed in such a manner that there is no access to the 'portion' without damaging the bag / packaging or breaking its seal.</p> <p>Then the portion shall be placed in Single Shot Crucible (SSC) fitted with Automatic Tapping Thimble (ATT) and metal lid tightly fitted. Top of the lid to be paint marked as per colour code of respective AT welding technique. A printed label bearing the details as per para 3.3 of IRST-19 shall be affixed on the outer wall of SSC and placed in polyethylene bag of minimum 100micron thickness & heat-sealed for protection from moisture. The heat sealed SSC containing the portion shall be packed in heavy-duty corrugated box. The box shall have a coloured strip of 75 mm width printed at the middle of the box as per colour scheme given in para 3.4 of this specification. The coloured strip shall run at centre of face and top of the box. The box shall be sealed by adhesive tape and shrink wrapped with</p>	
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			<p>Placed inside Single Shot Crucibles with metal lid sealing. Heat-sealed polythene bags and packed in heavy-duty corrugated cartons with shrink wrapping.</p> <p>Advantages:</p> <p>Reduces number of packages. Saves storage space. Ensures moisture protection. Follows existing marking and labeling requirements. Improves handling efficiency. Provides cost savings.</p> <p>Mould Packing Proposal Packaging Details: Individual moulds packed in polythene bags, then placed in carton boxes with shrink wrapping.</p> <p>Advantages: Breakage prevention. Moisture-proof packaging. Minimal changes to existing system while improving packaging quality. Cost-effective (only shrink wrapping added).</p> <p>5. M/s Railtech Welding & Equipment India Private Limited, Raipur</p> <p>Primary Packaging: Portions packed in polyethylene bags (IS:9738, Grade HM HDPE, 150 microns) for airtight sealing.</p> <p>Secondary Packaging: Polyethylene bags placed inside PVC buckets (IS: 3730) with auto-lock lids and color-coded caps for easy rail grade identification while</p>	<p>polyethylene of minimum 100micron thickness.</p> <p>The box shall be sealed by coloured adhesive tape as per colour code of para 3.4.1 of IRST-19 and shrink wrapped with polyethylene of minimum 100 micron thickness.</p> <p>Note-</p> <p>i) The inspecting officials shall ensure proper sealing of the boxes either with hologram or tamper proof lead seal, passing through the criss-cross strap meant for final packing.</p> <p>ii) Proper protection of ATT hole and thimble shall be ensured in transportation by using a piece of card board or similar material. A vinyl/PVC sticker shall be affixed on outside bottom of ATT hole to protect SSC from moisture.</p> <p>iii) Printed labels containing working instructions/precautions for handling, stacking, transportation & safe storage shall be affixed on outer wall of SSC and on one vertical</p>	
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			<p>retaining carton boxes for mould pairs.</p> <p>Advantages of Eliminating Cloth Bags Workforce Safety Improvement: Removes the need for operators to manually hold polythene and cloth bags together, reducing exposure to fine metal dust and poor ergonomic conditions.</p> <p>Reduction in Waste Generation: Less packaging waste left on railway tracks post-weld execution.</p> <p>Simplified Packing for Moulds: Prefabricated moulds packed individually, avoiding excess packaging.</p> <p>Optimized Inventory Management: Since Indian Railways already orders 5-10% extra moulds, this system accounts for transportation and handling damages.</p> <p>Concerns about PVC Buckets Environmental Impact: PVC buckets contribute to non-biodegradable waste around railway tracks.</p> <p>Global Best Practices: Moulds are conventionally packed directly in carton paper boxes instead of PVC buckets.</p> <p>Alternative Labeling: Suggests replacing the "date of manufacture" with the month and year of manufacture to</p>	<p>face of the box to ensure clarity in the working. Sample label may be referred to in Appendix-IV.</p> <p>iv) The insignia of firm, rail section and tapping system (ATT) shall be printed on two faces of the box in letters of 25 mm width & 125 mm height (minimum).</p> <p>v) Name and details of the firm shall be printed on another face of the box.</p>	
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			<p>accommodate production schedules.</p> <p>Each stakeholder has a different focus—cost, environmental concerns, handling, and durability—making the decision complex. Would you like me to compare these options and highlight the most suitable solution based on priorities such as cost, sustainability, or handling efficiency.</p> <p>6. TPP, Lucknow</p> <p>1. <u>Para 3.2</u></p> <p>Every portion shall be packed in a moisture proof bag of polyethylene to IS:9738, “Indian Standard Specification for polyethylene bags for general purposes” Grade HM HDPE of 150- micron thickness which shall be sealed so as to make it airtight.</p> <p>The polyethylene bag shall then be packed in a heavy-duty bag made of new cloth to IS:187 or any other superior packaging approved by RDSO. The open end of this packaging shall be stitched and sealed in such a manner that there is no access to the ‘portion’ without damaging the bag / packaging or breaking its seal.</p> <p>Then each portion bag shall again be packed in 2.0+0.2 mm thick PPCP (Only Virgin Poly Propylene Co Polymer - Impact</p>		
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			Grade of RIL grade B030 MG or equivalent) circumferential bucket bearing the details by screen printing on buckets as per Para 3.3 of IRST-19. The bucket shall have colour code as per Para 3.4.1(i) of IRST-19 for easy identification. The bucket shall have three way circumferential sealing inner lock lid system. The lid should facilitate easy stacking and should be tamper proof.		
3	3.3(x)		_____	(x) Approved key parameters of AT welding viz. preheating time, pressure, tapping time & reaction time etc. shall be printed on back of labels.	New sub para added: to provide instant ready information to welder
4	3.5	3.5 The bags containing portion shall be packed in a sturdy wooden/Heavy duty corrugated card board/Metallic container. No container with the portion bags shall weigh more than 60 kg. Any bag of 'portion' found damaged at the time of delivery shall NOT be accepted. The container shall have a coloured strip of 75mm width printed at the middle of the box as per the colour scheme given in the para 3.4 above of this specification. The coloured strip shall run at the centre	_____	3.5-The bags containing portion shall be packed in a sturdy wooden/Heavy duty corrugated card board/Metallic container. No container with the portion bags shall weigh more than 60 kg. Any bag of 'portion' found damaged at the time of delivery shall NOT be accepted. The container shall have a coloured strip of 75mm width printed at the middle of the box as per the colour scheme given in the para 3.4 above of this specification. The coloured strip shall run at the centre of faces	Deleted: The relevant content has been added in para 3.2 to keep the continuity of the activity i.e. portion packing

		of faces having lesser area and top of the container. The insignia of the firm, rail section and tapping system shall also be printed on the exterior of the container on the other two faces having larger area. The rail section and tapping system ('M' for Manual tapping system or ATT for auto tapping system) be printed in letters of 25mm width (minimum) having overall 150mm height (minimum).		having lesser area and top of the container. The insignia of the firm, rail section and tapping system shall also be printed on the exterior of the container on the other two faces having larger area. The rail section and tapping system ('M' for Manual tapping system or ATT for auto tapping system) be printed in letters of 25mm width (minimum) having overall 150mm height (minimum).	
5	5.0	5.0 DISPOSAL OF REJECTED BATCH: In the event of a batch failing to comply with the requirement of Para 4, the manufacturer will dispose off the rejected portions by igniting off the portions and converting them into metallic form at a safe place in presence of RDSO officials. The rejected batch shall be kept separately duly marked "Rejected" on each pack in red. Proper record of disposal shall be maintained.	<hr/>	5.0 DISPOSAL OF REJECTED BATCH: In the event of a batch failing to comply with the requirement of Para 4, the manufacturer will dispose off the rejected portions by igniting off the portions and converting them into metallic form at a safe place in presence of RDSO officials. Alternatively, the rejected batches (portion may be disposed off by mixing them into a pukka pit and adding water to render the portion unusable. The rejected batch shall be kept separately duly marked "Rejected" on each pack in red. Proper record of disposal shall be maintained.	Due to pollution creation and safety issues realistic disposal is difficult so alternate added
6	13.3 vi)	13.3 vi)	<hr/>	13.3 (vi) Subject to the results of the tests in	Vendor approval

		<p>Subject to the results of the tests in clause 12 and 13 above being satisfactory, firm shall be approved provisionally in the list of “RDSO vendors for developmental orders” for a period of two years.</p>		<p>clause 12 and 13 above being satisfactory, firm shall be approved provisionally in the list of “RDSO vendors for developmental orders” for a period of two years .</p>	<p>process-ensuring transparency and competition has been issued by Rly Bd vide letter no. 2021/RS(G)/779/7 dated 18/01/2022 In reference to RDSO letter no. SPL/DG (CD)/RB-Policy dated 18.07.2024 Rly Bd vide letter no. 2021/RS(G)/779/7 dated 06/09/2024 has clarified as under:</p> <p><i>The category of conditionally approved developmental vendors is not as per Railway Board policy. Such a list is causing confusion amongst the field officers. List of vendors published by RDSO on</i></p>
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					UVAM shall only consist of developmental and approved vendors, without any conditions.
7	14.1	<p>14.1 Subject to the results of the tests in clause 12 and 13 above being satisfactory, firm shall be approved provisionally in list of 'RDSO vendors for development orders'. After listing on the list of "RDSO vendors for developmental orders", 100 weld joints (for AT welding technique of same grade of rails) shall be executed by the firm in first contract in presence of Zonal Railway representative, not below the rank of JE/SSE. These field trial joints shall be monitored by concerned Zonal Railway as trial joints for a period of one year or till passage of 10 GMT traffic over the joint, whichever is earlier. Considering requirement of welded joints (For AT welding technique of different grades of rails) being very less in number and joints scattered over large stretches and larger time consume, field trial shall not be required for approval of technique for combination welding. The trial joints shall be distinctly marked by painting letter "T" on the web of the rail beyond 300 mm from the joints. Field</p>		<p>14.1—Subject to the results of the tests in clause 12 and 13 above being satisfactory, firm shall be approved provisionally in list of 'RDSO vendors for development orders'. After listing the firm on the list of "RDSO vendors for developmental orders", 100 weld joints (for AT welding technique of same grade of rails) shall be executed by the firm in first contract in presence of Zonal Railway representative, not below the rank of JE/SSE. These field trial joints shall be monitored by concerned Zonal Railway as trial joints for a period of one year or till passage of 10 GMT traffic over the joint, whichever is earlier. Considering requirement of welded joints (For AT welding technique of different grades of rails) being very less in number and joints scattered over large stretches and larger time consume, field trial shall not be required for approval of technique for</p>	<p>Vendor approval process-ensuring transparency and competition has been issued by Railway Board vide letter no. 2021/RS(G)/779/7 dated 18/01/2022 In reference to RDSO letter no. SPL/DG (CD)/RB-Policy dated 18.07.2024 Railway Board vide letter no. 2021/RS(G)/779/7 dated 06/09/2024 has clarified as under:</p>

		trial report shall be prepared as per Annexure - 5 and submitted to RDSO by Zonal Railway after signature of firm's representative and nominated Zonal Railway official not below the rank of JE/SSE and countersigned by concerned sectional ADEN.		combination welding. The trial joints shall be distinctly marked by painting letter "T" on the web of the rail beyond 300 mm from the joints. Field trial report shall be prepared as per Annexure - 5 and submitted to RDSO by Zonal Railway after signature of firm's representative and nominated Zonal Railway official not below the rank of JE/SSE and countersigned by concerned sectional ADEN.	<i>The category of conditionally approved developmental vendors is not as per Railway Board policy. Such a list is causing confusion amongst the field officers. List of vendors published by RDSO on UVAM shall only consist of developmental and approved vendors, without any conditions.</i>
8	14.4	After satisfactory field trial report, provisional approval of the firm in the "List of RDSO vendors for developmental orders" shall be regularized for a time period of 5 years from the date of provisional approval.	<hr/>	<p>14.4 The respective AT welding technique shall be considered for regular adoption on IR only after satisfactory field trial report of above 100 joints.</p> <p>The firm may process for upgradation from 'developmental vendor' to 'approved vendor' as per procedure laid down in ISO APEX Document of RDSO. The minimum quantity for upgradation will be as specified in TDG 0017. This minimum quantity is excluding above 100 joints.</p>	

9	16.6.4 (c)	Alphabetic codes allotted to the existing portion manufacturing firms are given below: ITC=T, Pandrol/ HTI =H, OTPL =O, SIRIL =S, RMPL =R, CDI =C, PTEW =P, ORA =A, AMIABLE =M, TPP(NR)=N	_____	16.6.4(c) Alphabetic codes allotted to the existing portion manufacturing firms/ plants are given below: ITC=T, Pandrol/ HTI =H, OTPL =O, SIRIL =S, RMPL =R, CDI =C, PTEW =P, ORA =A , AMIABLE =M, TPP(NR)=N	Due to Addition and deletion of firms
10	Relevant part of Para 20	For para 16.6.4 (a) i.e. for welders/supervisors of Zonal Railways: First two/three initials of the Railway to which the supervisor or welder belongs. or For para 16.6.4 (b) i.e. for welders of portion manufacturing firms and welding contractors: Code allotted for the portion manufacturing firms, for whom welders of portion manufacturing firms and welding contractors are approved. Alphabetic codes allotted to the existing portion manufacturing firms are given below: ITC =T, Railtech / HTI=H, OTPL=O, SIRIL=S, RMPL=R, , TPP(NR)=N, CDI=C, PTEW=P	_____	The insignia containing firm's code allotted (ITC=T, Pandrol/ HTI =H, OTPL =O, SIRIL =S, RMPL =R, CDI =C, PTEW =P, ORA =A, AMIABLE =M, TPP(NR)=N) and year of manufacture shall be embossed in the mould during manufacture for identification.	
11	Para 6.0 of Annexure -2	Alphabetic codes allotted to the existing portion manufacturing firms are given below: ITC =T, Railtech/ HTI=H, OTPL=O, SIRIL=S, RMPL=R, TPP(NR)=N, CDI=C, PTEW=P,	_____	The insignia containing firm's code allotted (ITC=T, Pandrol/ HTI =H, OTPL =O, SIRIL =S, RMPL =R, CDI =C, PTEW =P, ORA =A, AMIABLE =M, TPP(NR)=N)	

		ORA=A		and year of manufacture shall be embossed in the mould during manufacture for identification.	
12	Annexure -2 Para 9.0	<p>9.0 PACKING:</p> <p>9.1 Each pre-fabricated mould shall be individually packed and sealed in polyethylene bags made out of polyethylene conforming to IS: 9738-2003 Grade HM HDPE of 150 micron thickness or as prescribed by IRS-T-19 2020.</p> <p>9.2 A pair of such packed moulds shall again be packed in carton paper boxes confirming to IS: 2771 (Second Revision). Proper sealing shall be done on each carton.</p> <p>9.3 Each carton shall be clearly marked giving manufacturer's name, date of manufacture and rail section, batch number for easy identification.</p>	<p>1.TPP,Lucknow</p> <p>9.0 PACKING</p> <p>9.0 Each pre-fabricated mould shall be individually packed and sealed in polyethylene bags of polyethylene made out of polyethylene conforming to IS: 9738-2003 Grade HM HDPE of 150 micron thickness.</p> <p>9.1 A set of such packed moulds shall again be packed in double wall produced with B flutes as specified in Corrugated Fibre board Boxes — Specification IS-2771 (Part 1) : 2022 (Third Revision). Proper seal packing of the fibre board boxes shall be done by packing tapes of BOPP (Biaxial Oriented Polypropylene) material of width 3 inches and thickness 40 micron with acrylic adhesive</p> <p>9.2 Each fibre board box shall be clearly marked giving manufacturer's name, date of manufacture and rail section, batch number for easy identification.</p> <p>2.Raybon Metals Pvt Ltd, Bilaspur</p> <p>Proposed Packing System: Portions packed in polythene and cloth bags per IRS T-19 standards. Placed inside Single Shot</p>	<p>9.0 PACKING:</p> <p>9.1 Each pre-fabricated mould shall be individually packed and sealed in bag of polyethelene conforming to IS: 9738-2003 Grade HM HDPE of 150 micron thickness or as prescribed by IRS-T-19.</p> <p>9.2 A pair set of such packed moulds shall again be packed in PVC bucket/box corrugated fibre board box conforming to IS:3730 IS: 2771.</p> <p>Proper seal packing of the bucket/box shall be done and shrink wrapped to prevent moisture. The bucket/box shall be auto-locked and not openable without damaging the lid.</p> <p>9.3 Each bucket/box shall be clearly marked giving manufacturer's name, date of manufacture and rail section, batch number for easy identification.</p>	Preventing moisture & increase in service life of portion and easy identification in field.

Crucibles with metal lid sealing.
Heat-sealed polythene bags and
packed in heavy-duty corrugated
cartons with shrink wrapping.

Advantages:

Reduces number of packages.
Saves storage space. Ensures
moisture protection. Follows
existing marking and labeling
requirements. Improves handling
efficiency. Provides cost savings.

Mould Packing Proposal

Packaging Details: Individual
moulds packed in polythene
bags, then placed in carton boxes
with shrink wrapping.

Advantages:

Breakage prevention. Moisture-
proof packaging.
Minimal changes to existing
system while improving
packaging quality.
Cost-effective (only shrink
wrapping added).

**3. M/s Railtech Welding &
Equipment India Private
Limited, Raipur**

Global Best Practices: Moulds
are conventionally packed
directly in carton paper boxes
instead of PVC buckets.

4. M&C comments

Every portion shall be packed in
a moisture proof bag of
polyethylene to IS:9738, "Indian
Standard Specification for
polyethylene bags for general
purposes" Grade HM HDPE of

150-micron thickness which shall be sealed so as to make it airtight. The polyethylene bag shall then be packed in a heavy-duty bag made of new cloth to IS:187 or any other superior packaging approved by RDSO. The open end of this packaging shall be stitched and sealed in such a manner that there is no access to the 'portion' without damaging the bag / packaging or breaking its seal. Then each portion bag shall be packed in PVC bucket of suitable strength conforming to IS: 3730 bearing the details as per Para 3.3 of IRST-19. The bucket shall have colour code as per Para 3.4.1(i) of IRST-19 for easy identification. The bucket shall be auto-locked and not openable without damaging the lid.

5. M/s ORA Kanpur

We can mention each part/piece of pre-fabricated mould shall be individually packed - As per work agreements we receive from Indian Railways, we have to supply 5 % extra moulds for all orders and 10% extra for some of the orders. This already covers the quantity which may get damaged during transportation and handling. - Additionally, Using PVC bucket will add lot of non bio-degradable waste around the Railway tracks during weld execution. - Globally moulds are being packed directly in the carton paper boxes. - One batch of mould (600 sets) can be

manufactured in more than one day. Instead of date of manufacture, we can mention month and year of manufacture.

6. M/s Amiable Impex, Mumbai

1.Primary Packaging Enhancement

- Material: LDPE or HDPE with a minimum thickness of 200 microns.
- Purpose: To serve as the primary packaging material for the portion.
- Performance Requirement: The packaging must pass a drop test (packaging drop test to Indian/UN/ASTM standards) to ensure durability and prevent rupture upon accidental falls, thereby minimizing material loss & losing its ignition property.

2. Proposed Material: Multi-layer paper bags with moisture barrier lining.

- Construction: Outer layer of kraft paper with inner poly-coated, waxed, or aluminum foil lining.
- Advantages: Provides adequate moisture resistance. Ensures biodegradability and eco-friendliness. Offers customizable strength for various handling requirements.

These suggestions aim to provide a sustainable and robust packaging solution, aligning both with functional requirements and environmental considerations. We trust that, keeping in view the functional requirement of safe and reliable packaging, the above suggestions will be positively

			<p>considered.</p> <p>7. M/s The India Thermit Corporation Ltd., Kanpur</p> <p>PVC bucket packaging increases costs significantly per portion and mould pair.</p> <p>Handling & Transportation: Carton boxes are easier to manage and transport compared to PVC buckets.</p> <p>Storage Space: PVC buckets require more storage space.</p> <p>Environmental Impact: PVC bucket usage is not eco-friendly</p>		
13.	4.5.1 of Annexure-3	The container shall be of appropriate thickness and as per approved drawing submitted by the individual manufacturer. It shall be strong enough to protect the Single shot Crucible during transportation.	_____	The container shall be of appropriate thickness and as per approved drawing submitted by the individual manufacturer. It shall be strong enough to protect the Single Shot Crucible during transportation. Handle shall be of suitable strength (with rubber grip at middle) to handle the crucible containing portion safely.	To handle the crucible containing portion safely.
14.	Annexure 3.0 Para 9	<p>PRODUCT TRACEABILITY:</p> <p>The insignia containing firm's code allotted (ITC=T, Railtech/ HTI=H, OTPL=O, SIRIL=S, RMPL=R, IFA=F, CDI=C, TPP(NR)=N, PTEW=P as per AT welding Manual) and year of manufacture shall be Marked in the crucible during manufacture for identification.</p>	_____	<p>PRODUCT TRACEABILITY:</p> <p>The insignia containing firm's/plants code allotted (ITC=T, Pandrol/HTI=H, OTPL=O, SIRIL=S, RMPL=R, IFA=F, CDI=C, PTEW=P, ORA=A, AMIABLE=M & TPP(NR)=N), as per AT welding Manual) and year of manufacture shall be marked in the crucible during manufacture for identification.</p>	Due to Addition and deletion of firms