

SPECIFICATION FOR A WELDED AUSTENITIC
STAINLESS STEEL TUBE FOR A TEST TANK.

(ELECTROSTATIC SEPTA)

1. General

The European Organization for Nuclear Research, CERN-Lab. II, is constructing a new accelerator of 300 GeV in Geneva, Switzerland.

Beam extraction from this accelerator will be done with the aid of an electrostatic field, the circulating beam being shielded against it by a thin metal foil of 9 m length. This device, called electrostatic septum, will be housed in three ultra-high vacuum tanks of 3 m length each.

For laboratory tests of various types of electrostatic septa, an ultra-high vacuum test tank will be manufactured at CERN. The specification for the stainless steel tube from which this tank will be made is given below.

2. Drawing

The drawing of the tube, object of this call for tenders, is numbered 8032-5-46-3. The drawing of the tank, No. 8032-5-51-0, is also part of this specification.

3. Dimensions and tolerances

The dimensions and tolerances of the stainless steel tube are :

Length	:	3600	±	10	mm	
Internal diameter	:	550	mm	±	2	mm
Roundness within	:	3	mm			
Wall-thickness	:	6	mm	+ 0.5	mm	
				- 0		

4. Steel

The tube must be made of austenitic stainless steel according to standard specification AISI 304 L, with a carbon content less than or equal to 0.03 %. The steel must be of a certified quality, the quality of the sheet must be verified by ultrasonic testing.

5. Welding

The weld has to be made by argon-arc welding, after cleaning of the surfaces to be welded. It should be made by an experienced welder of ultra-high vacuum equipment, and must be of the highest quality as required for ultra-high vacuum apparatus. Only one weld along the tube is accepted. It must penetrate to the inner surface of the tube and this surface must be smooth and free from pittings or cavities.

6. Annealing treatment

After it has been welded, the tube must be annealed following the steel supplier's indications by heating to about 1100^oC followed by rapid cooling. The cooling must not be done with oil.

7. Surface quality

The surface of the tube has to be pickled before delivery to CERN.

8. Acceptance

Mechanical tolerances, weld quality and surface finish will be verified at the manufacturer's premises before delivery of the tube to CERN.

9. Transportation

The manufacturer is responsible for the safe transport of the tube to CERN, Meyrin. The consequence of damage during transport must be covered by an insurance policy taken over by the manufacturer.

10. Deadline dates

Tenders should be sent to CERN not later than August 10, 1972. The tube should be delivered to CERN as soon as possible, at the latest within 1½ months after placing the order.

11. Stress-relieving treatment of the tube

An exceptional dimensional stability will be essential for this tank and should be maintained during several bakeouts at 300°C. Therefore, stress-relieving treatment at 650°C preferably under vacuum, or at least in a neutral atmosphere, will be necessary after the manufacture of the tank at CERN. This treatment must also be done by the supplier of the tube. The tank must be heated to 650° in half an hour, followed by slow cool down at a rate of 150° per hour.

The stress-relieving treatment will take place approximately one month after the delivery of the tube to CERN. The precise schedule will be fixed by common agreement at the time of delivery of the tube. The transport of the tank to the manufacturer's premises for this stress-relieving treatment will be dealt with by CERN. The manufacturer has to make sure that the baking equipment will be available at that time.

12. Questionnaire

In your offer please indicate the precision you can guarantee for the tolerance X on drawing No. 8032-5-46-3.

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Votre référence
Your reference

Notre référence
Our reference

LAB II/BT/KB/EEK
▶ A rappeler dans la réponse
Please quote in your reply

Genève, 28th July, 1972.

Re : Specification D-10

Dear Sirs,

You are invited to make an offer for the fabrication of a welded stainless steel tube which will be used to build an ultra-high vacuum tank. Stress-relieving treatment of the tank after it has been manufactured at CERN must also be part of the tender, as described in the attached specification.

The deadline date for tenders will be August 10, 1972.

We look forward to your early reply,

Yours faithfully,

Y. Baconnier,
CERN LAB II/BT

encs.