

## CERTIFICATE OF ANALYSIS

PV 112/1  
Reference Material for Grade 316Ti Stainless Steel Alloy

	Certified Value	Standard Deviation
<b>C</b>	<b>0.047</b>	0.001
<b>Mn</b>	<b>1.577</b>	0.014
<b>P</b>	<b>0.018</b>	0.003
<b>S</b>	<b>0.023</b>	0.001
<b>Si</b>	<b>0.515</b>	0.019
<b>Cu</b>	<b>0.102</b>	0.003
<b>Ni</b>	<b>11.14</b>	0.16
<b>Cr</b>	<b>17.56</b>	0.06
<b>Mo</b>	<b>2.03</b>	0.02
<b>Ti</b>	<b>0.394</b>	0.002

Analysis listed as percent by weight

The certified values listed are the present estimate of the true value based on the results of an interlaboratory testings.

The methods of analysis were the Optical Emission Spectrometry and the X-ray Emission Spectrometry. The standard deviations are based on the 95% confidence interval.

### Certification process

The requirement of ISO Guide 31 and 35 were followed for the preparation of this reference material and certificate of analysis. This is a reference material as defined by ISO Guide 30.

### Co-operating laboratories

INDUSTEEL, Charleroi, BELGIUM  
TechLab, Metz, FRANCE

**Homogeneity** : this material was tested for homogeneity using ASTM Standard Practice E 826 and found acceptable.

**Traceability** : the following Certified Reference Materials were used to validate the analytical data listed in this certificate : IRSID 1824, IRSID 1826, IRSID 1823, IRSID 1825, SRM C1154a, SS 461, SS 468

**Available form** : this material is available only in the form of a disc, approximately 40 mm in diameter and 25 mm thick.

**Source** : this material was produced by UGINE Savoie, France

**Intended use** : this material is intended for use in optical emission and X-ray spectrometric methods of analysis. The entire depth of the disc may be used.

**Caution** : as with any bar material, avoid optical emission spectrometric burns in the center of the disc (5 mm radius), as some segregation may be present.

**Sample preparation** : for best analytical results, use the same method for preparing the analytical surface on all reference materials as you use for production specimens.  
Avoid overheating the disc during surface preparation.

**Safety notice** : a material safety data sheet is not required for this material. This material will not release or otherwise result in exposure to a hazardous chemical, under normal conditions of use.

Inquiries concerning this reference material should be directed to :

TechLab S.A.  
4 C La Tannerie  
57072 METZ Cedex 3  
France  
Phone : (33) 03 87 75 54 29  
Fax : (33) 03 87 36 23 90

Certified by : Pascal Bodo

on February 10, 2003

Certificate number : PV112/1-100203-TL

References :

E 826-85 (Reapproved 1996) Standard Practice for Testing Homogeneity of Materials for the Development of Reference Materials

ISO Guide 30 (Second edition, 1991) Terms and definitions used in connection with reference materials

ISO Guide 31 (Second edition, 2000) Reference materials – Contents of certificates and labels

ISO Guide 35 (Second edition, 1989) Certification of reference materials – General and statistical principles