



2023

TRATAMIENTOS SECUNDARIOS



Established in 2012, HT-MX is dedicated to supplying high-quality, on-time heat treatment and engineering services. With a strong engineering backbone, strict AS9100D certified quality system, the country's only NADCAP certification for stainless & carbon steel, aluminium and HIP under the same roof, HT-MX continues to specialize in implementing high complexity heat treatments for the aerospace industry.

Services

Traditional Heat Treatments & HIPing

(Precipitation Hardening, Quench & temper, Aging, Aluminum Hardening, Carburizing, Carbonitriding, Nitriding, Annealing, Normalizing, SubZero etc)

Engineering and Lab Services (Cycle design, Hardness, MicroHardness, Microstructure analysis, etc)

Certifications

- AS9100 Rev D
- ISO 9001:2015
- ***NADCAP***

Industries Served:

- ***Aerospace***
- Automotive
- Oil & Gas
- Medical
- Metal-Mechanic

✓ **Only Commercial Heat Treat with *NADCAP* Certification**
for multiple materials:

✓ **17-4PH, 17-7PH, 15-5PH**

✓ **440, 416, 410**

✓ **4130, 4140, 4340, 9340, etc**

✓ **Aluminium hardening/ageing**

✓ **Tests: Metallography, Surface contamination,
decarburization..**

✓ **Hot Isostatic Pressing (HIP)**

✓ **Only *NADCAP* certified HIP supplier in Latin America.**

✓ **MERIT STATUS**

✓ **OEM and Tier1 approvals**

✓ **AS9100 Rev D Certified 5 years running.**

✓ **ISO 9001 certified since 2013**

✓ **Quality System fully designed and implemented in-house.**

bsi.



Certificate of Registration

QUALITY MANAGEMENT SYSTEM - AS9100D AND ISO 9001:2015

This is to certify that:

Procesos Termicos HT-MX
SAPI de CV
Calle 40 #5200-7
Col. Dale
Chihuahua
Chihuahua
31050
Mexico

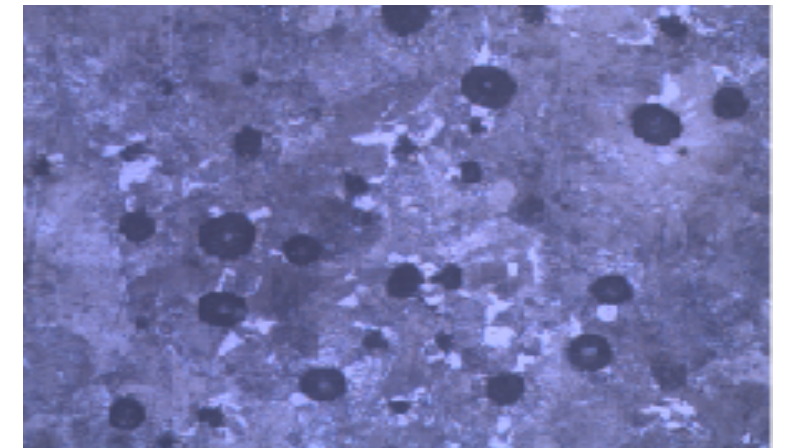
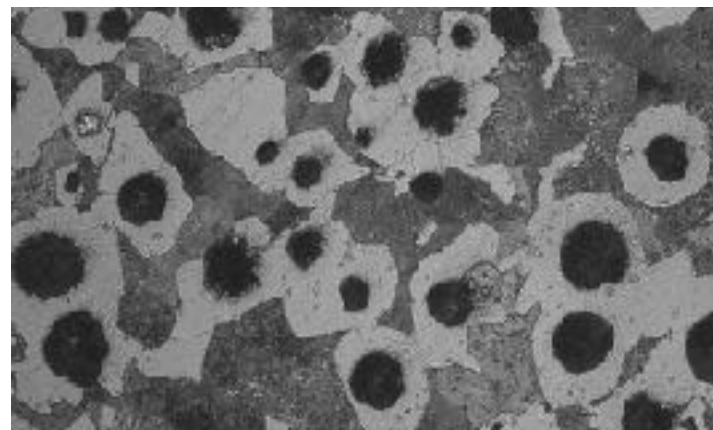
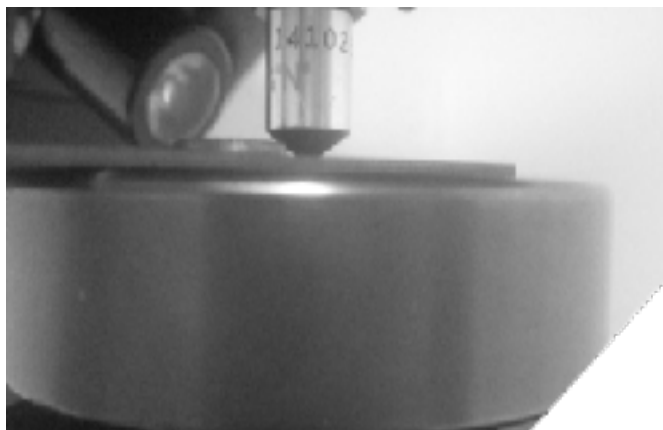
Holds Certificate No:

FM 681758



Services

- **Metallography.**
 - ✦ Grain sizing.
 - ✦ Retained austenite.
 - ✦ Microstructure analysis.
- **Hardness testing.**
 - ✦ All Rockwell scales.
 - ✦ Superficial Rockwell scales.
 - ✦ Micro hardness testing.
 - ✦ Micro hardness profile.
 - ✦ Vickers scale.
 - ✦ Conversion to Knoop
 - ✦ Sample preparation.
- **Weld Analysis.**
 - **ASTM E18** Standard Test Methods for Rockwell Hardness of Metallic Materials
 - **ASTM E110** Standard Test Method for Rockwell and Brinell Hardness of Metallic Materials by Portable Hardness Testers
 - **ASTM E140** Standard Hardness Conversion Tables for Metals
 - **AC7102** Nadcap audit criteria for heat treatment - hardness and / or conductivity tests
 - **ASTM E384** Standard Test Method for Knoop and Vickers Hardness of Materials
 - **ASTM E3** Standard Guide for Preparation of Metallographic Specimens
 - **ASTME407** Standard Practice for Microetching Metals and Alloys
 - **ASMT E45** Standard Test Methods for Determining the Inclusion Content of Steel
 - **ASTM E1077** Standard Test Methods for Estimating the Depth of Decarburization of Steel Specimens



Hot Isostatic Pressing (HIPing)



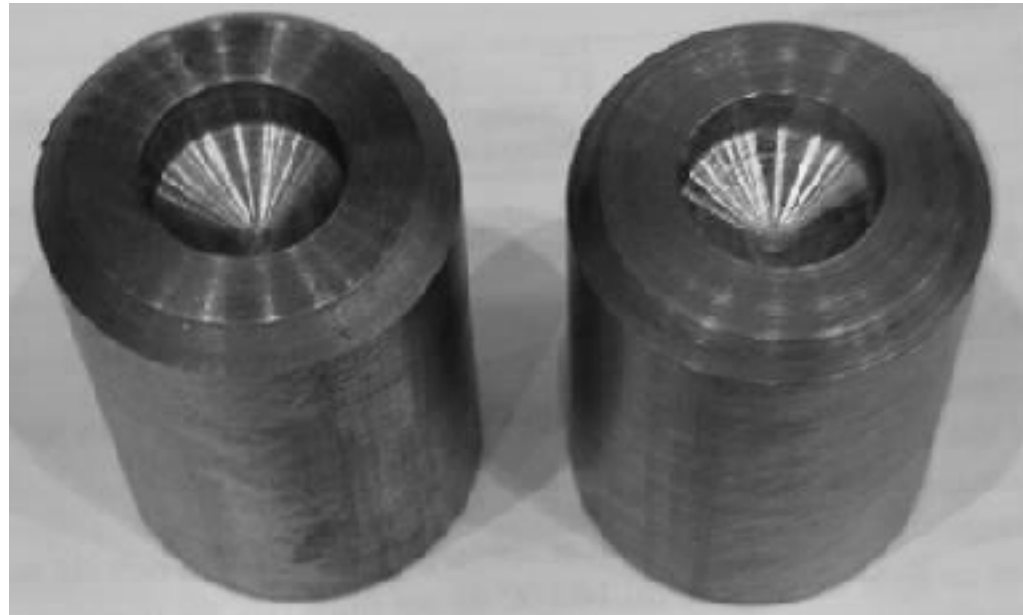
Specs

Dimensions: (375mm x 1,200mm)

- Max Pressure: 2,070bar (30k PSI)
- Max Temperature: 1,400°C (2,552 °F)
- Max load weight: 600 kg (1,322 lbs)
- **Material that can be processed:**
 - Nickel based Super alloys
 - Titanium
 - Aluminum
 - Stainless steels
 - Etc.

HIP Fundamentals

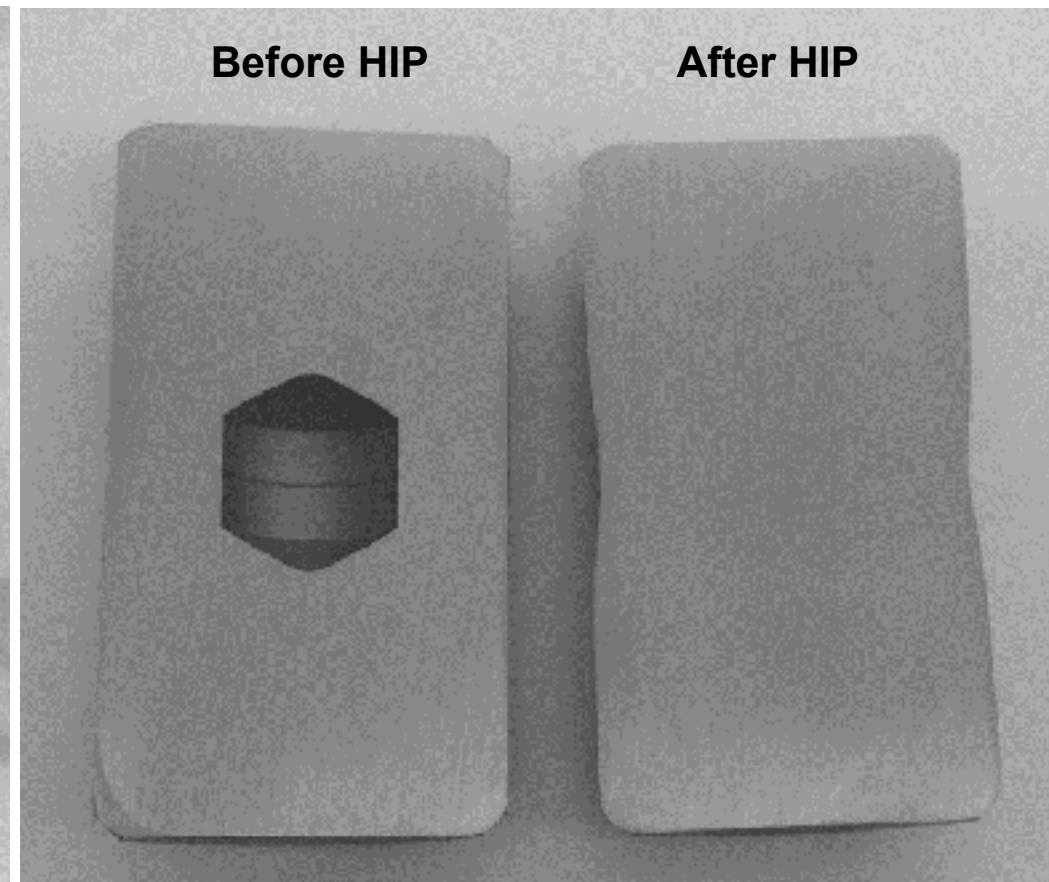
HIP: is used to reduce the porosity of metals and increase the density of materials. The HIP process subjects a component to both elevated temperature and isostatic gas pressure in a high pressure containment vessel.



Two cylinder halves,
each with a drilled 1"
diameter hole...



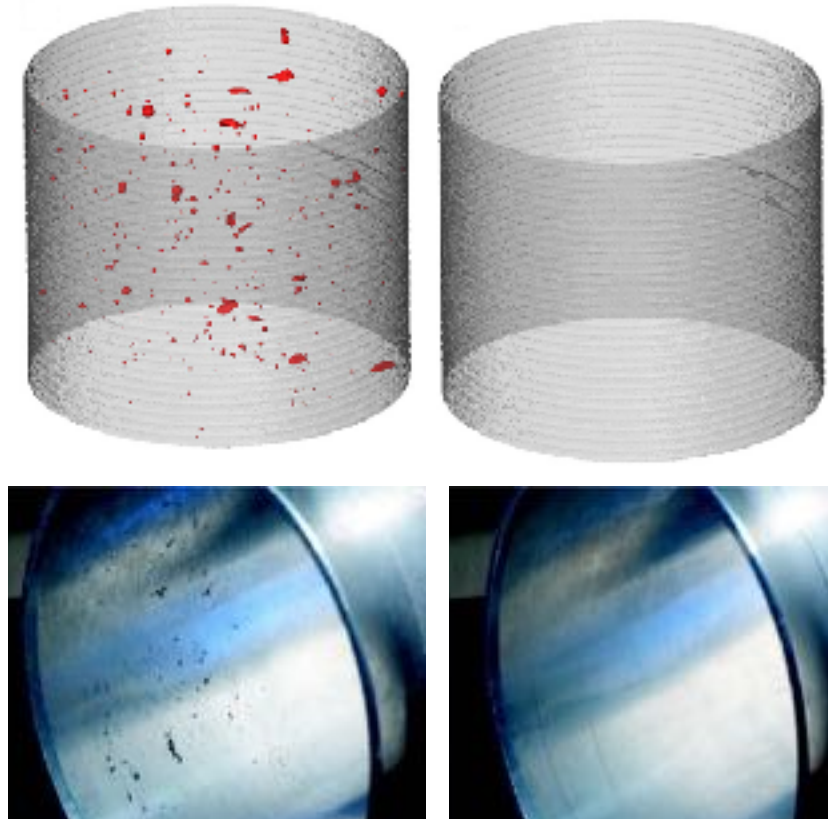
are welded
together to form
one cylinder with
a large void
inside...



The huge pore is
eliminated by HIP!

Advantages of HIPing

- Elimination of internal defects gives elimination of stress concentrations and crack initiation points
- Superior material properties
- Drastically increased fatigue life 10 – 100x
- Increased ductility and fracture toughness
- Reduced property scatter
- More predictive material properties
- **Low weight design**
- Improved machined/polished surface quality
- Increased corrosion, optical, sealing and esthetic properties
- Scrap rate reduction
- Strength is mainly determined by microstructure, not defects!



Contact



WWW.HT-MX.COM

•E-mail: info@ht-mx.com

•Telephone number:

+52-614-492-3800

•Address: 40^a #5200 int. 7
Col. Dale C.P. 31050.

Chihuahua, Chih. Mexico

•Location: [https://
goo.gl/maps/aYlW5](https://goo.gl/maps/aYlW5)