Datum Data Sheet
Datum PhD 304 Stainless Steel

© Datum Alloys Ltd 2025

Datum PhD is Designed for Laser Cutting & Etching

Datum PhD's microstructure and low residual stress ensure maximum performance. Our unique approach to metallurgy, from alloy selection to foil manufacturing and frame mounting, enables us to provide stencil materials that help control the printing process and reduce SMT defects:

- The industry's tightest thickness and flatness tolerances guarantee predictable area ratios and transfer efficiencies across the entire print area
- Stress-relieved foils resist heat distortion from laser cutting, offering superior flatness to optimise gasketing and registration
- Proprietary rolling and annealing processes deliver consistent materials for dependable and repeatable performance

Repeatability

Repeatability is the key to optimising print performance.

Datum PhD is world's first Stainless Steel alloy developed specifically for laser-cut SMT stencils and is used in a variety of other applications. Harder and more durable than standard Stainless Steel, Datum PhD provides longer life, especially in demanding production processes.

- Thickness tolerance of +/- 2% is the tightest in the industry, with > 60 repeatability
- Controlled surface roughness of < 0.15um maintains paste rolling characteristics from stencil to stencil
- Uniform grain structure and low residual stress ensures consistent response to tensioning, chemical etching, laser cutting and printing processes

Typical Chemical Composition (%)

Chemical Composition %	PhD 304
Carbon (C)	0.08
Manganese (Mn)	2.0
Silicon (Si)	1.0
Phosphorous (P)	0.045
Sulphur (S)	0.03
Chromium (Cr)	18.0 - 20.0
Nickel (Ni)	8.0 - 10.50
Iron (Fe)	Balance

Specifications

Gauges:

- 0.02 to 0.5mm

Widths:

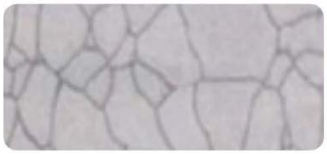
- up to 690mm

Formats:

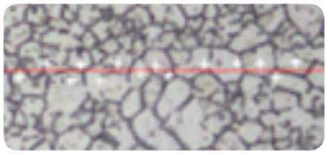
- Coils - 610mm wide
- Sheets – 610mm wide or below at any length
- Frames – mounted into any frame
- Border holes – cut as required

Application:

- Lead pitches: > 0.5mm
- Leadless pitches: >1.0mm
- Solder Paste Type:3



Standard Stainless Steel Microstructure
Grain Size: 15-30µm



Datum PhD Microstructure
Grain Size: 7-11µm

UK: +44 (0) 1548 855 900
Email: uk.sales@datumalloys.com
US: +1 607 239 6274
Email: us.sales@datumalloys.com
Singapore: +65 3157 0394
Email: sg.sales@datumalloys.com