# Datasheet Process

Before starting:

* Set market priority and approvals from commercial lead
* Get clearance from legal on new product naming (brand, trademarks, etc.)
* Internal agreement on what to share in datasheet

Who is responsible for the various elements of the datasheet process?

* Content – Technical and commercial leads of new product
* Updates – Technical and commercial leads of new product
* Production / Publication - Brand

|  |  |
| --- | --- |
| **New Product Datasheet** | **Existing Product Datasheet Revision** |
| * Get current word version template from Brand
* Technical lead to complete the technical content (don’t worry about formatting)
	+ Only fill out content relevant to this product / market
* Technical lead to review content with relevant R&D director
* Commercial lead to update the commercial elements (don’t worry about formatting)
* Send completed template back to Brand noting if any special handling is required
* Brand will develop a draft for review with team (~2 weeks)
 | * Check online whether a datasheet exists
* Ask Brand for an editable version of the previous datasheet
* Technical lead to update the technical data sheet as needed
	+ Only fill out content relevant to this product / market
* Technical lead to review content with relevant R&D director
* Commercial lead to update the commercial elements
* Send completed template back to Brand, noting if any special handling is required
* Brand will develop a draft for review with team (~2 weeks)
 |

# Datasheet Template

Product Name

|  |  |
| --- | --- |
| *Applicable specifications (AMS, ASTM, DIN):* Associated specifications (AISI, AMS, ASME, ASTM, DIN, EN, ISO, JIS, K, MIL-S, QQ-S, SAE, UNS): | Top 3 only, the rest will appear towards the end. |

# Type analysis

*Single figures are* nominal *except where noted.*

Content Note: Enter the appropriate percentage values or Balance. Leave a space between the value and percentage. Reorder the elements in value order from highest to lowest, with Balance first — moving from the left side of the table to the right. If two elements have the same value, list in alphabetical order. For example: 2.50 % or 2.50–4.5 %

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Aluminum |  % | Aluminum Oxide | % | Bismuth | % |
| Boron | % | Calcium | % | Carbon | % |
| Chromium | % | Cobalt | % | Columbium/Niobium | % |
| Columbium + Tantalum | % | Copper | % | Hydrogen | % |
| Iron | % | Lead | % | Magnesium | % |
| Manganese | % | Molybdenum | % | Nickel | % |
| Nickel + Cobalt | % | Nitrogen | % | Oxygen | % |
| Phosphorus | % | Selenium | % | Silicon | % |
| Sulfur | % | Tantalum | % | Titanium | % |
| Tungsten | % | Vanadium | % | Yttrium | % |
| Zinc | % | Zirconium | % | Other, Total | % |

Footnotes (if any):

# Forms manufactured

* X
* X
* X
* X

# Description

Enter a description here. Character count with spaces approximately 950.

## Key properties

* X
* X
* X
* X

## Markets

* X
* X
* X
* X

## Applications

* X
* X
* X
* X

# Powder properties

|  |  |  |
| --- | --- | --- |
| Category | Product Properties | Alternate Product Properties |
| PART NUMBER |  |  |
| APPLICATION |  |  |
| MAXIMUM PARTICLE SIZE | Max \_\_ wt% > \_\_ μm | Max \_\_ wt% > \_\_ μm |
| MINIMUM PARTICLE SIZE | Max \_\_ vol% < \_\_ μm | Max \_\_ wt% < \_\_ μm |
| LSD PERCENTILE |  |  |
| ATOMIZATION |  |  |
| APPARENT DENSITY (G/CM3) | Measured according to \_\_\_ and reported | Measured according to \_\_\_ and reported |
| HALL FLOW (S/50G) | Measured according to \_\_\_ and reported | Measured according to \_\_\_ and reported |

Footnotes (if any):

# Additive manufacturing process guidance

### Applicable specification:

Complete with applicable information. Sample processes and conditions include: Anneal Heat Treatment (ANN), Homogenization (Hom), Hot Isostatic Pressed condition (HIP or HIP/ANN or HIP/Sol/Age or HIP/Sol/Pre), Solution Anneal and Age (Sol/Age), *Solution Anneal and Precipitation Heat Treatment condition (Sol/Pre),* and Stress Relief (SR).

|  |  |
| --- | --- |
| As-built | Content goes here. |
| Process / Condition | Content goes here. |
| Process / Condition | Content goes here. |
| Process / Condition | Content goes here. |
| Machinability | Content goes here. |

### Typical microstructures

Note: Insert typical microstructure images and descriptions here.

|  |  |  |  |
| --- | --- | --- | --- |
| CONDITION | TRANSVERSE (X-Y PLANE) | LONGITUDINAL (Y-Z PLANE) | NOTES |
| As-built | Insert photo | Insert photo | Content goes here. |
| Process / Condition | Insert photo | Insert photo | Content goes here. |
| Process / Condition | Insert photo | Insert photo | Content goes here. |
| Process / Condition | Insert photo | Insert photo | Content goes here. |

Footnotes (if any):

# Corrosion resistance

Corrosion resistance description content (if any).

IMPORTANT NOTE:

The following 4-level rating scale (Excellent, Good, Moderate, Restricted) is intended for comparative purposes only and is derived from experiences with wrought product. Additive manufactured material may perform differently; corrosion testing is recommended. Factors that affect corrosion resistance include temperature, concentration, pH, impurities, aeration, velocity, crevices, deposits, metallurgical condition, stress, surface finish, and dissimilar metal contact.

Enter the appropriate values (Excellent, Good, Moderate, Restricted). Delete items for which there is no value.
Will be listed in alphabetical order.

|  |  |  |  |
| --- | --- | --- | --- |
| Nitric Acid |  | Sulfuric Acid |  |
| Phosphoric Acid |  | Acetic Acid |  |
| Sodium Hydroxide |  | Salt Spray (NaCl) |  |
| Sea Water |  | Sour Oil/Gas |  |
| Humidity |  |  |  |

## Corrosion test results

### Applicable specification / test parameters:

|  |  |
| --- | --- |
| ALLOY | AVERAGE CORROSION RATE, MDD |
|  |  |
|  |  |

Footnotes (if any):

### Applicable specification / test parameters:

|  |  |
| --- | --- |
| ALLOY | CORROSION RATE, MPY |
| BOILING | ROOM TEMPERATURE |
|  |  |  |
|  |  |  |

Footnotes (if any):

# Physical properties

|  |  |  |  |
| --- | --- | --- | --- |
| PROPERTY | At or From | English Units | Metric Units |
| SPECIFIC GRAVITY |  |  |  |
| DENSITY |  | \_\_ lb/in3 | \_\_ kg/m3 |
| MEAN SPECIFIC HEAT |  | \_\_ Btu/lb/°F | \_\_ J/kg·K |
| MEAN COEFFICIENT OF THERMAL EXPANSION | \_\_ to \_\_°F (\_\_ to \_\_°C) | \_\_ x 10-6 length/length/°F | \_\_ x 10-6 length/length/°C |
| \_\_ to \_\_°F (\_\_ to \_\_°C) | \_\_ x 10-6 length/length/°F | \_\_ x 10-6 length/length/°C |
| \_\_ to \_\_°F (\_\_ to \_\_°C) | \_\_ x 10-6 length/length/°F | \_\_ x 10-6 length/length/°C |
| THERMAL CONDUCTIVITY |  | \_\_ Btu-in/hr/ft2/°F | \_\_ W/m·K |
| MODULUS OF ELASTICITY (E) |  | \_\_ ksi | \_\_ MPa |
| ELECTRICAL RESISTIVITY | \_\_°F (\_\_°C) | \_\_ ohm-cir-mil/ft | \_\_ microohm·cm |
| MEAN TEMPERATURE COEFFICIENT OF ELECTRICAL RESISTIVITY | \_\_ to \_\_°F (\_\_ to \_\_°C) | \_\_ x 10-4 ohm/ohm/°F | \_\_ x 10-4 per °C |
| \_\_ to \_\_°F (\_\_ to \_\_°C) | \_\_ x 10-4 ohm/ohm/°F | \_\_ x 10-4 per °C |
| \_\_ to \_\_°F (\_\_ to \_\_°C) | \_\_ x 10-4 ohm/ohm/°F | \_\_ x 10-4 per °C |
| CURIE TEMPERATURE |  | \_\_°F | \_\_°C |
| MELTING RANGE |  | \_\_°F | \_\_°C |
| THERMAL EMF VS. \_\_\_\_\_ | \_\_ to \_\_°F (\_\_ to \_\_°C) | \_\_ mV/°F |  |

Footnotes (if any):

## Physical property charts (if any)

# Magnetic properties

Magnetic properties description content (if any).

|  |  |  |
| --- | --- | --- |
| SATURATION FLUX DENSITY (Bs) | \_\_ G | \_\_ kG |
| COERCIVITY (Hc) | \_\_ Oe | \_\_ Oe |
| MAXIMUM PERMEABILITY (μ MAX) | \_\_ | \_\_ |
| RESIDUAL INDUCTION (Br) | \_\_ G | \_\_ kG |
| HYSTERESIS LOSS | \_\_ J/cm3/cycle | \_\_ kJ/m3 |
| TREATMENT FOR FINAL CLOSED PACK ANNEAL | \_\_°F | \_\_°C |
| MAGNETIC ATTRACTION |  |  |

Footnotes (if any):

## Typical DC magnetic properties

### Process / condition:

|  |  |  |  |
| --- | --- | --- | --- |
| FORM | μ AT B = 40 G | μ MAX | Hc FROM H = 1 Oersted |
|  |  |  |  |
|  |  |  |  |

Footnotes (if any):

## Typical DC magnetic properties

### Process / condition:

|  |  |  |
| --- | --- | --- |
| H (Oe) | STRESS RELIEVED AT \_\_°F (\_\_°C), \_\_ HRS | ANNEALED AT \_\_°F (\_\_°C), \_\_ HRS |
| B (GAUSS) | B (GAUSS) |
| GAUGE < = 0.007 IN | GAUGE > 0.007 IN | GAUGE < = 0.007 IN | GAUGE > 0.007 IN |
|  |  |  |  |  |
|  |  |  |  |  |

Footnotes (if any):

## Typical DC magnetic properties (Alternate)

### Process / condition:

|  |  |  |  |
| --- | --- | --- | --- |
| HEAT TREATMENT | COERCIVITY (A/m)FROM 8 kA/m | DC RELATIVE PERMEABILITY (μ MAX) | B (TESLA) A/m |
| 400 | 800 | 1600 | 4000 | 8000 | 16000 |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

Footnotes (if any):

## Typical DC magnetic properties (Alternate)

### Process / condition:

|  |  |
| --- | --- |
| 0.2% YIELDSTRENGTH | FLUX DENSITY AT INDICATED MAGNETIC FIELD STRENGTH |
| 10 Oe800 A/m | 20 Oe1600 A/m | 50 Oe4000 A/m | 100 Oe8000 A/m | 200 Oe16000 A/m |
| ksi | MPa | kG | T | kG | T | kG | T | kG | T | kG | T |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |

Footnotes (if any):

## Typical DC magnetic properties (Alternate)

### Induction after heat treatment indicated

|  |  |
| --- | --- |
| INDUCTION (B) AT APPLIED FIELD (H), OERSTEDS | HEAT TREATMENT AND SIZE |
| STANDARD MECHANICAL ANNEAL | STANDARD MAGNETIC ANNEAL |
| 0.010 IN STRIP | 0.014 IN STRIP | 6 IN DIAMETER BAR | 9 IN X 4 IN SLAB |
|  |  |  |  |  |
|  |  |  |  |  |

Footnotes (if any):

## Typical DC magnetic properties (Alternate)

### Process / condition:

|  |  |  |  |
| --- | --- | --- | --- |
| CONDITION | ROCKWELL B HARDNESS MID-RADIUS | MAXIMUM RELATIVE PERMEABILITY | FROM 10,000 GAUSS (1 TESLA) |
| COERCIVITYHc (Oe) | COERCIVITYHc (A/m) | REMANENCEBr (G) | REMANENCEBr (T) |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

Footnotes (if any):

## Typical DC magnetic properties vs. heat treated temperatures (Alternate)

### Process / condition:

|  |  |  |  |
| --- | --- | --- | --- |
| HEAT TREATING TEMPERATURE | μ MAX | FLUX DENSITY AT H = 50 Oe | FROM 10 kG |
| °F | °C | REMANENCE Br (G) | COERCIVITYHc (Oe) |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

Footnotes (if any):

## Typical AC magnetic properties

### Process / condition:

|  |  |  |  |
| --- | --- | --- | --- |
| THICKNESS | μ 40 G | μ 200 G | μ 2000 G |
| IN | MM |
|  |  |  |  |  |
|  |  |  |  |  |

Footnotes (if any):

# Typical AC core loss

### Process / condition:

|  |  |  |
| --- | --- | --- |
| FREQUENCY | GAUSS | SIZE, IN |
| 0.005 | 0.007 | 0.010 | 0.014 | 0.019 |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

Footnotes (if any):

## Typical AC core loss (Alternate)

### Process / condition:

|  |  |  |  |
| --- | --- | --- | --- |
| HEAT TREATMENT | \_\_ IN (\_\_ MM) | \_\_ IN (\_\_ MM) | B (TESLA) |
| SPECIFIC CORE LOSS (W/kg) | SPECIFIC CORE LOSS (W/kg) |
| 60 Hz | 400 Hz | 1000 Hz | 60 Hz | 400 Hz | 1000 Hz |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

Footnotes (if any):

### Comparison of physical and magnetic properties

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ALLOY | SATURATION FLUX DENSITY Bs, (TESLA) | MAXIMUM PERMEABILITY | RESISTIVITYμΩ-MM | MICROOHM·CM | COERCIVITYHc (A/m) |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

Footnotes (if any):

## Magnetic charts (if any)

### Shielding properties

|  |  |
| --- | --- |
| Shielding |  |
| Annealing |  |
| Best characteristics |  |
| Relative capability |  |
| Effectiveness |  |

# Typical mechanical properties

### Process / condition:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| FORM, GAUGE, HEAT TREATMENT or TEMP | ORIENTATION | 0.2% YIELD STRENGTH  | ULTIMATE TENSILE STRENGTH  | ELONGATION IN 4D or 2 IN  | REDUCTION OF AREA |
| ksi | MPa | ksi | MPa | % | % |
|  | X and Y |  |  |  |  |  |  |
|  | Z |  |  |  |  |  |  |
|  | X and Y |  |  |  |  |  |  |
|  | Z |  |  |  |  |  |  |
|  | X and Y |  |  |  |  |  |  |
|  | Z |  |  |  |  |  |  |
|  | — |  |  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| FORM, GAUGE, HEAT TREATMENT or TEMP | IMPACT ENERGY or CHARPY V-NOTCH | HARDNESS | CONSOLIDATED MATERIAL \_\_\_ CONTENT | PROPORTIONAL LIMIT |
| FT-LBS | J | Include the units in the field below, as they must be different per all and condition. (HRC, HRB, HV, HB, etc. | % | ksi | MPa |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

Footnotes (if any):

### Elasticity and impact

|  |  |  |
| --- | --- | --- |
| HEAT TREATMENT | ELASTIC MODULUS (IN TENSION) | IZOD IMPACT |
| 103 ksi | 103 MPa | FT-LB | J |
|  |  |  |  |  |
|  |  |  |  |  |

Footnotes (if any):

### Resistance sample calculations

|  |  |  |  |
| --- | --- | --- | --- |
| RESISTIVITY | WIDTH | THICKNESS | RESISTANCE (CALCULATED) |
| (Ω sm/f) | IN | IN | Ω |
|  |  |  |  |
|  |  |  |  |

Footnotes (if any):

### Heat treatment

|  |  |
| --- | --- |
| Annealing |  |
| Coating |  |
| Cooling |  |
| Hydrogen annealing |  |
| Hardening |  |
| Heat treatment |  |
| Normalizing |  |
| Other heat treating atmospheres |  |
| Other heat treatment temperatures |  |
| Magnetic property requirements |  |
| Solution treatment |  |
| Standard treatment |  |
| Stress relieving |  |
| Tempering |  |
| Thermal treatment |  |

### Coatings

|  |  |
| --- | --- |
| Inlac |  |
| Oxide |  |

### Workability

|  |  |
| --- | --- |
| Blanking and forming |  |
| Cold working |  |
| Forging |  |
| Hot working |  |
| Machinability |  |
| Weldability |  |

# Typical feeds and speeds

The feeds and speeds in the following charts are conservative recommendations for initial setup. Higher feeds and speeds may be attainable depending on machining environment.

### Turning — single-point and box tools

|  |  |  |
| --- | --- | --- |
| DEPTH OF CUT, IN | HIGH-SPEED TOOLS | CARBIDE TOOLS  |
| SPEED, FPM | FEED, IPR | TOOL MATERIAL | SPEED, FPM | FEED, IPR | TOOL MATERIAL |
| UNCOATED or BRAZED | COATED or THROW AWAY |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

### Turning — cut-off and form tools

|  |  |  |
| --- | --- | --- |
| SPEED, FPM | FEED, IPR | TOOL MATERIAL |
| CUT-OFF TOOL WIDTH, IN | FORM TOOL WIDTH, IN | HIGH-SPEED TOOLS | CARBIDE TOOLS |
| 1/16 | 1/8 | 1/4 | 1/2 | 1 | 1-1/2 | 2 |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

### Rough reaming

|  |  |  |
| --- | --- | --- |
| HIGH-SPEED TOOLS | CARBIDE TOOLS | FEED, IPR, REAMER DIAMETER, IN |
| SPEED, FPM | TOOL MATERIAL | SPEED, FPM | TOOL MATERIAL | 1/8 | 1/4 | 1/2 | 1 | 1-1/2 | 2 |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

### Drilling — high-speed tools

|  |  |  |
| --- | --- | --- |
| SPEED, FPM | FEED, IPR | TOOL MATERIAL |
| NOMINAL HOLE DIAMETER, IN |
| 1/16 | 1/8 | 1/4 | 1/2 | 3/4 | 1 | 1-1/2 | 2 |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

### Tapping — high-speed tools

|  |  |
| --- | --- |
| SPEED, FPM | TOOL MATERIAL |
|  |  |
|  |  |

### Die threading — high-speed tools

|  |  |
| --- | --- |
| SPEED, FPM | TOOL MATERIAL |
| 7 OR LESS, TPI | 8 TO 15, TPI | 16 TO 24, TPI | 25 AND UP, TPI |
|  |  |  |  |  |
|  |  |  |  |  |

### Milling — end peripheral

|  |  |  |
| --- | --- | --- |
| DEPTH OF CUT, IN | HIGH-SPEED TOOLS | CARBIDE TOOLS |
| SPEED, FPM | FEED, IN PER TOOTH | TOOL MATERIAL | SPEED, FPM | FEED, IN PER TOOTH | TOOL MATERIAL |
| CUTTER DIAMETER, IN | CUTTER DIAMETER, IN |
| 1/4 | 1/2 | 3/4 | 1-2 | 1/4 | 1/2 | 3/4 | 1-2 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |

### Broaching — high-speed tools

|  |  |  |
| --- | --- | --- |
| SPEED, FPM | CHIP LOAD, IN PER TOOTH | TOOL MATERIAL |
|  |  |  |
|  |  |  |

# Additional machinability notes

Additional machinability content.

### Other information

|  |  |
| --- | --- |
| *Applicable specifications (AMS, ASTM, DIN):* Associated specifications (AISI, AMS, ASME, ASTM, DIN, EN, ISO, JIS, K, MIL-S, QQ-S, SAE, UNS): | Top 3 will appear at top, the rest will appear here.. |
| Wear resistance |  |

### Appendix

|  |  |
| --- | --- |
| PHYSICAL PROPERTIES | ASTM STANDARD # |
|  |  |
|  |  |

### Similar materials

|  |  |
| --- | --- |
| COMPANY | ALTERNATIVE TITLE |
| Other Generic Names |  |
|  |  |
|  |  |

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