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## MATERIAL DATA SHEET

## MATERIAL FOR **AEROSPACE** INVAR TOOLS THERMOPLASTIC APPLICATION

### FERRYNOX N29K

#### Description

The Ferrynox N29K is a **patented** material, resulting of an important internal development at **FERRY CAPITAIN**. The Production of low thermal expansion alloys is enhanced through a perfect control of residual elements allowing the achievement of a low CTE at higher curing temperature (450°C).

#### Application

This material is mainly used in the **Aerospace** field (molds for thermoplastic applications) requiring tools with a very low coefficient of expansion.

#### Chemical Composition

| Cast Analysis |     |     |      |
|---------------|-----|-----|------|
| FC Reference  | %Ni | %Co | Fer  |
| FerryNox N29K | 29  | 17  | Base |

**Density : 7,7**

#### Physical Properties

| FC Reference  | Temperature (°C)       | Mean coefficient of thermal expansion (m/m.°C) |
|---------------|------------------------|--|
| Ferrynox N29K | Between 20°C and 200°C | 6,45. 10 <sup>-6</sup>                         |
|               | Between 20°C and 250°C | 6,28. 10 <sup>-6</sup>                         |
|               | Between 20°C and 300°C | 6,40. 10 <sup>-6</sup>                         |
|               | Between 20°C and 350°C | 6,44. 10 <sup>-6</sup>                         |
|               | Between 20°C and 400°C | 6,72. 10 <sup>-6</sup>                         |
|               | Between 20°C and 450°C | 7,33. 10 <sup>-6</sup>                         |



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## Mechanical properties

| Tensile Test  |                  |                        |                   |                |
|---------------|------------------|------------------------|-------------------|----------------|
| FC Reference  | Temperature (°C) | Tensile Strength (Mpa) | Yield Point (Mpa) | Elongation (%) |
| Ferrynox N29K | 20°C             | 450                    | 280               | 20             |
|               | 300°C            | 330                    | 150               | 23             |
|               | 400°C            | 320                    | 140               | 25             |
|               | 450°C            | 310                    | 135               | 26             |

## Weldability

Ferrynox N29K can be welded, **FERRY CAPITAIN** make available a complete welding procedure specific to this material.

We developed cold welding; it allows the welding of accessories on parts.