

Magnetic Shielding Alloys



DATUMALLOYS

Datum Alloys Limited, Unit B, Bridge Works, Station Yard Industrial Estate, Kingsbridge, Devon TQ7 1ES, UK. Tel: +44 (0) 1548 855 900 Fax: +44 (0) 1548 855 901

NOMINAL CHEMICAL COMPOSITION:

		Ni	Mo	Mg	Si	C	Cr	Cu	Fe
Alloy 50	Composition 3	48%	-	.5%	.4%	.2%	-	-	Balance
Alloy 75	Composition 2	75%	-	.5%	.2%	.02%	2%	5%	Balance
Alloy 79	Composition 1	80%	5%	.5%	.2%	.01%	-	.02%	Balance

APPLICABLE SPECIFICATIONS:

Alloy 50	ASTM A - 753 TYPE 2
Alloy 75	ASTM A - 753 TYPE 3
Alloy 79	ASTM A - 753 TYPE 4

MECHANICAL PROPERTIES:

(typically annealed material):

	Tensile Strength	% Elongation on 50.4mm	Hardness - Brinell
Alloy 50	590 Nmm ⁻²	25	121
Alloy 75	550 Nmm ⁻²	40	125
Alloy 79	520 Nmm ⁻²	40	100

PHYSICAL PROPERTIES:

	Density gcm ⁻³	Melting Point °C	Curie Temp. °C	Saturation Magnetostriction	Specific Heat J/Kkg
Alloy 50	8.3	1427	471	+25 x 10 ⁻⁶	-
Alloy 75	8.6	1454	438	1 x 10 ⁻⁶	502
Alloy 79	8.8	1454	443	1 x 10 ⁻⁶	494

THERMAL PROPERTIES:

Thermal Conductivity

Alloy 50	11 Wm ⁻¹ K ⁻¹
Alloy 75	23.5 Wm ⁻¹ K ⁻¹
Alloy 79	24 Wm ⁻¹ K ⁻¹

Coefficient of Expansion

	Temperature Range			x 10 ⁻⁶ K ⁻¹
Alloy 50	25°C	to	100°C	8
Alloy 75	25°C	to	100°C	12.5
Alloy 79	25°C	to	100°C	12

ELECTRICAL PROPERTIES:

Electrical Resistivity

Alloy 50	47 μOhm cm
Alloy 75	58 μOhm cm
Alloy 79	58 μOhm cm

ALLOY 50, ALLOY 75, ALLOY 79

ALLOY 50 - a soft magnetic nickel-iron alloy with approximately 48% Nickel, and 52% Iron. Given an appropriate thermal treatment, this material is capable of a high permeability. Typical applications include transformer laminations, magnetic shields and relay parts.

ALLOY 75 - a soft magnetic alloy with approximately 80% Nickel, 5% Copper, 2% Chromium, and 15% Iron. Given an appropriate thermal treatment, this material is capable of a high permeability. Typical applications include transformer laminations and magnetic shields.

ALLOY 79 - a soft magnetic alloy with approximately 80% Nickel, 5% Molybdenum, 15% Iron. Given an appropriate thermal treatment, this material is capable of a high permeability. Typical applications include transformer laminations and magnetic shields.