TECHNICAL DATA SHEET

FLEXO & FLEXOMAG

1. DESCRIPTION OF PRODUCTS AND FIELDS OF APPLICATION

FLEXO is a range of rubber-ferrites obtained by mixing magnetic powders of strontium ferrite, rubbers and other additives

COMPONENT	%
$SrFeO_3$-X	85-95
Acrylonitrile Butadiene -Copolymer (NBR) Chlorinated Polyethylene -Polymer (CPE)	**5-15**
Other additives	<0,5

Chemical composition

FLEXO MAG is the range of MAGNETIZED rubber-ferrites obtained by magnetizing the **FLEXO** range in different ways.

What distinguishes FLEXO?	
	high quality standards
	minimal environmental and safety impacts
	Fully recoverable and recyclable product
	High flexibility

Especially:

FLEXO 75

Isotropic rubber-ferrite obtained by extrusion.

- ✓ suitable for applications that do not require high magnetic forces
- ✓ high mechanical strength and flexibility

Fields of application: advertising and graphics**,** household appliances, logistics and storage, construction and countless other applications.

FLEXO 100,120,150,180,150N, 180N

Anisotropic plasto-ferrite obtained by rolling (calendering).

- ✓ Suitable for applications requiring medium to high magnetic forces
- ✓ high mechanical strength and flexibility

Fields of application: lifts, pneumatic cylinders, displays, toys, level indicators, magnetic switches, magnetotherapy, DC motors, magnetic floors and slopes, ski racks, relays, separators and countless others.

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2. TECHNICAL SPECIFICATIONS OF FLEXO MATERIALS

Magnetic Properties (at 20 °C)

Product	*Analytical Method*	Br **		BHc		JHc		BHmax	
		G	*mT*	*Oe*	*KA/m*	*Oe*	*KA/m*	*MGOe*	*KJ/m³*
Flexo 75	*IO ML01*	500	50	> 800	> 60	> 1000	> 60	> 0.3	> 2
		1750	175						
Flexo 100	*IO ML01*	1751	175	> 1300	> 100	> 1700	> 130	> 0.6	> 5
		2000	200						
Flexo 120	*IO ML01*	2001	200	> 1500	> 120	> 1900	> 150	> 0.9	> 7
		2250	225						
Flexo 150 150N	*IO ML01*	2251	225	> 1700	> 135	> 2000	> 155	> 1.0	> 8
		2500	250						
Flexo 180 180N	*IO ML01*	2501	250	> 1800	> 145	> 2100	> 165	> 1.3	> 10
		2750	275						

Physical Properties (at 20 °C)

The experience gained in many years of activity has allowed MyP Magnetica Italiana s.r.l. to optimize different recipes to meet multiple customers' requests for the parameters of Hardness and Elasticity; more specific requests can be agreed with the Commercial Department of MyP Magnetica Italiana s.r.l.

Product	Shore Hardness **		Elasticity			
	Analytical Method	*D*	Thickness (mm)	2	5	8
			Analytical Method	°		
Flexo 75	*IO ML05*	30	*IO ML09*	≥ 150	≥ 150	-
		50				
Flexo 100	*IO ML05*	30	*IO ML09*	≥ 150	≥ 130	≥ 100
		50				
Flexo 120	*IO ML05*	30	*IO ML09*	≥ 150	≥ 130	≥ 100
		50				
Flexo 150 150N	*IO ML05*	30	*IO ML09*	≥ 150	≥ 130	≥ 100
		50				
Flexo 180 180N	*IO ML05*	30	*IO ML09*	≥ 150	≥ 130	≥ 100
		50				

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Prodotto	Temperature Coefficient			Thermal Expansion Coefficient	Maximum Operating Temperature (1)	Specific Weight (± 0.2%)
	Analytical Method	*Δ Br/ ΔT (%/ °C)*	*Δ JHc/ ΔT (%/ °C)*	*(°C $^{-1}$)*	*(°C)*	*g/cm³*
Flexo 75	*IO ML13*	- 0.2	+ 0.45	10.5 x 10^{-6}	60 *(80)*	3.6
Flexo 100	*IO ML13*	- 0.2	+ 0.45	10.5 x 10^{-6}	80 *(100)*	3.6
Flexo 120	*IO ML13*	- 0.2	+ 0.45	10.5 x 10^{-6}	80 *(100)*	3.6
Flexo 150	*IO ML13*	- 0.2	+ 0.45	10.5 x 10^{-6}	80 *(100)*	3.6
Flexo 150N	*IO ML13*	- 0.2	+ 0.45	10.5 x 10^{-6}	120 *(140)*	3.6
Flexo 180	*IO ML13*	- 0.2	+ 0.45	10.5 x 10^{-6}	80 *(100)*	3.6
Flexo 180N	*IO ML13*	- 0.2	+ 0.45	10.5 x 10^{-6}	120 *(140)*	3.6

(1) The values in brackets are to be understood as maximum operating Temperatures for short periods in order to avoid loss of flexibility. Once the maximum declared temperatures are exceeded, the bachelization process begins, i.e. the hardening and loss of elasticity of the rubber present inside the mixture. Loss of flexibility does not impair magnetic values.

3. HANDLING

FLEXO is

free of barium, phthalates and heavy metals

non-flammable according to UL94

a recyclable, completely non-toxic product classified as non-hazardous pursuant to the provisions of Regulation (EC) No. 1907/2006 (REACH), Regulation (EC) 1272/2008 (CLP), RoHS Directive and it also meets the European standard EN71/3 regarding the release of heavy metals released from toys.

It can therefore be handled without special precautions.

For further information, MyP Magnetica Italiana S.r.l refers to the relevant Safety Data Sheet: FLEXO & FLEXO MAG.

4. STORAGE

FLEXO has excellent resistance to weathering and aging.
It is however advisable to:

avoid contact of **FLEXO** products with chemical agents (greases, solvents, etc.) for long periods to avoid product deterioration and impairment

keep **FLEXO** away from electromagnetic fields in order to preserve its magnetic characteristics

store FLEXO **products** at a temperature of 20 °C (± 5 °C) in a non-humid and, if possible, closed environment, in order to maintain the magneto-physical properties unaltered.

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5. SHAPES AND SIZES

We have the most advanced technologies for cutting magnetic rubber, which allow us to create any shape, as well as unique and innovative solutions.

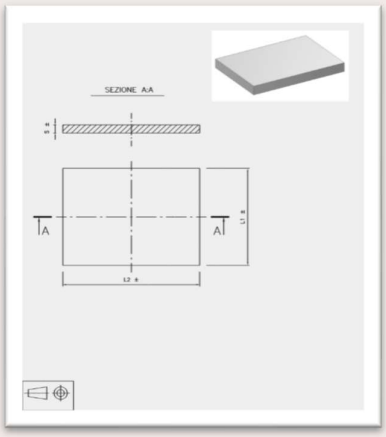
The cutting options for our FLEXO materials are:

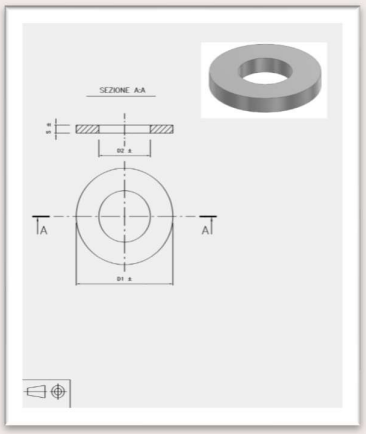
- ✓ **Standard**
- ✓ **Premium**
- ✓ **Plus**

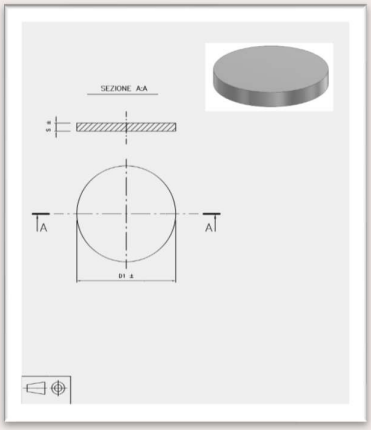
each with increasing levels of precision and customization to meet tailored dimensional specifications.

The standard shapes are: strips, rings, and rods.

5.1 DIMENSIONAL TOLERANCES **







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FLEXO & FLEXOMAG

STRIPS

DESCRIPTION			
	S [mm]	L1 [mm]	L2 [mm]
MIN. VALUE	0,80	4,00	4,00
MAX. VALUE	8,00	450,00	1.500,00
Cut - STANDARD	S [mm]	L1 <300 [mm]	L2 <300 [mm]
TOLERANCES + -	0,15	0,50	0,50
Cut - STANDARD	S [mm]	L1 300-450 [mm]	L2 300-500 [mm]
TOLERANCES + -	0,15	1,00	1,00
Cut - STANDARD	S [mm]	L1 300-450 [mm]	L2 >501 [mm]
TOLERANCES + -	0,15	1,00	3,00
Cut - PREMIUM	S <5mm [mm]	L1 <400 [mm]	L2 <400 [mm]
TOLERANCES + -	0,15	0,20	0,20
Cut - PLUS	S [mm]	L1 <400 [mm]	L2 <400 [mm]
TOLLERANZE / TOLERANCES + -	0,15	0,10	0,10

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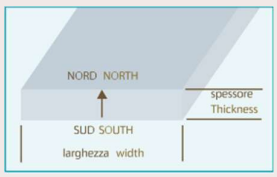
RINGS - RODS

DESCRIPTION			
	S [mm]	D1 [mm]	D2 [mm]
MIN. VALUE	0,80	8,00	4,00
MAX. VALUE	8,00	440,00	420,00
Cut - STANDARD	S <5mm [mm]	D1 [mm]	D2 [mm]
TOLLERANZE / TOLERANCES + -	0,15	0,30	0,30
Cut - PREMIUM	S <5mm [mm]	D1 [mm]	D2 [mm]
TOLERANCES + -	0,15	0,20	0,20
Cut - PLUS	S [mm]	D1 [mm]	D2 [mm]
TOLERANCES + -	0,10	0,10	0,10

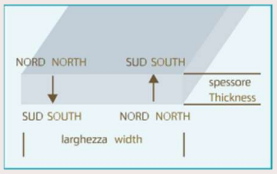
6. MAGNETIZATION

FLEXO MAG can be magnetized in different ways:

AXIAL

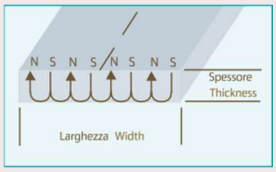


TWO POLES



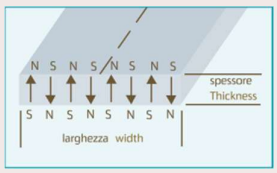
These are types of magnetization used to obtain small magnets for sensors and in any case when the force of attraction is not relevant.

MULTIPOLE ON ONE SIDE



PP2: polar pitch 2mm
PP3: polar pitch 3mm
PP5: polar pitch 5mm
PP7: polar pitch 7mm

MULTIPOLE ON BOTH SIDES



PP7: polar pitch7mm

These are types of magnetization used to obtain magnets, normally large in size, when the force of attraction is the predominant factor.

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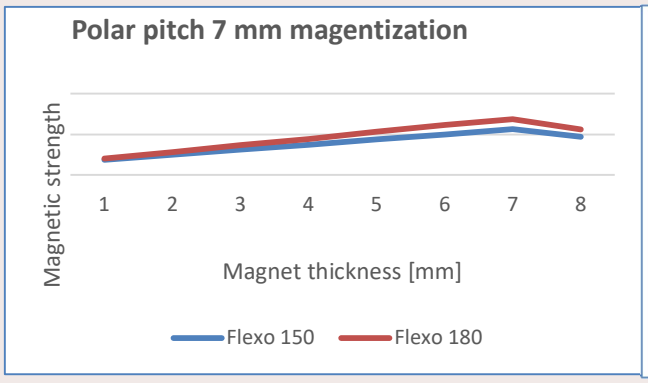
Multipole magnetization is a method by which several alternating magnetic poles (a succession of N-S-N-S poles...) are created on the same surface of a magnet.
The arrangement of the poles is not random: it follows a regular repetition called the polar pitch.
The pole pitch is the distance between two poles of equal polarity (e.g. from one North pole to the next North pole).

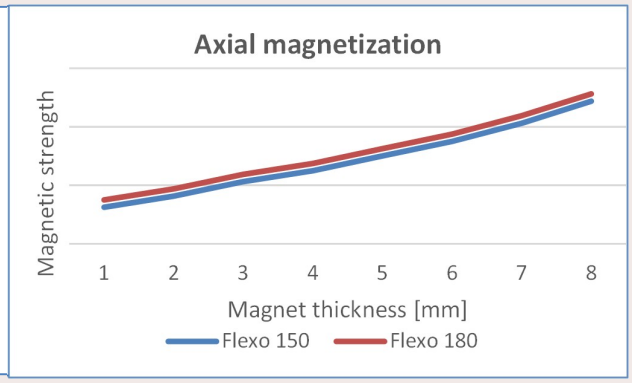
MULTIPOLE MAGNETIZATION ON ONE SIDE is the type of magnetization that gives greater adhesive force. The least magnetized surface is normally marked. The different types of magnetization, as the thickness and type of **FLEXO MAG** vary, give different Magnetic Force (measured in *G* with IO ML14) and Attraction Force (measured in *N/cm²* with IO ML10).

Product	MAGNETIZATION TYPE									
	Polar pitch 2		Polar pitch 3		Polar pitch 5		Polar pitch 7		Axial	
	G	*N/cm²*	*G*	*N/cm²*	*G*	*N/cm²*	*G*	*N/cm²*	*G*	*N/cm²*
Flexo 100	140	0,064	350	0,240	450	0,400	530	0,440	120	0,054
Flexo 120	170	0,080	400	0,320	500	0,440	560	0,480	150	0,068
Flexo 150-150N	200	0,096	450	0,400	550	0,520	620	0,580	180	0,080
Flexo 180-180N	220	0,120	500	0,450	600	0,560	670	0,680	200	0,095

Table referring to of 2mm thick samples – measurements at 20°C

Relation between magnetic force and thickness:





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Iron plate for support

The magnetic force resulting from the **MULTIPOLE MAGNETIZATION ON ONE SIDE** can be significantly increased by applying an iron plate with a thickness of about 0,5 to 1mm mm on a surface of the magnet, as can be deduced from the sealing diagrams illustrated below.
The iron plate is applied to the least magnetized surface.

Product	ATTRACTION FORCE											
	Polar Pitch 7- Thickness 1,2mm				Polar pitch 7- Thickness 2mm				Polar pitch 7- Thickness 3,2mm			
	G	*N/cm²*	*g/cm²*	*kg/m²*	*G*	*N/cm³*	*g/cm³*	*kg/m²*	*G*	*N/cm³*	*g/cm³*	*kg/m²*
Flexo 100	390	0,2	21	212	530	0,6	58,5	586	735	0,9	96	960
Flexo 100 with 0,5mm Fe Plate	450	0,6	58	580	640	0,8	82	820	830	1,1	106	1060
Flexo 180	500	0,3	30	295	670	0,6	68	680	820	1,0	104	1040
Flexo 180 with 0,5mm Fe Plate	675	1,1	114	1138	730	1,2	121	1210	860	1,3	136	1360

CALIBRATED MAGNETIZATION

We have advanced technology for the calibrated magnetization of our **FLEXO MAG** magnets.

Magnetic calibration means the possibility of giving the magnet a desired attraction force and/or a desired residual magnetic induction value Br, in any case lower than the maximum saturation value.

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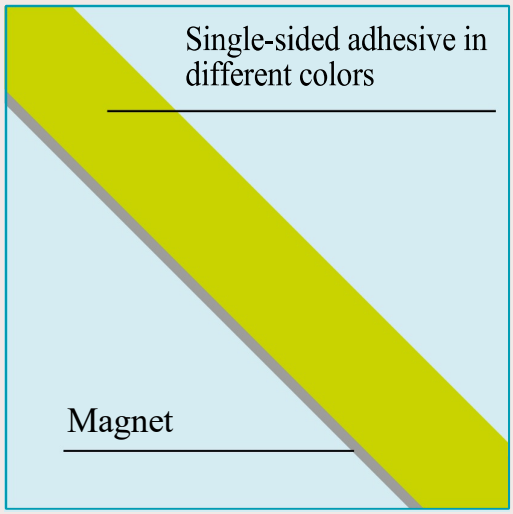
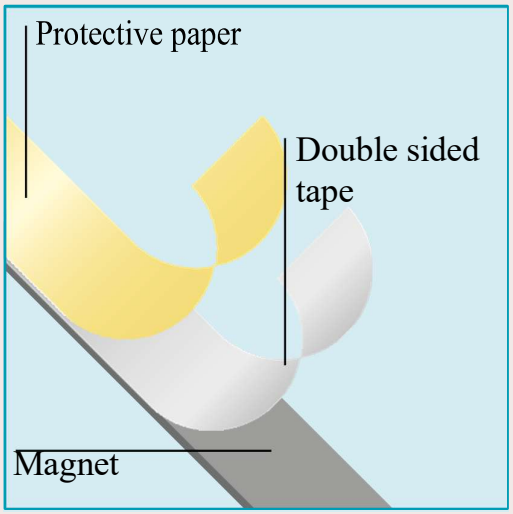
7. CUSTOMIZATION

FLEXO and **FLEXO MAG** magnets can be customized by varnishing one or more surfaces, or by applying colored single-sided adhesive tape or with a double-sided adhesive surface.





The adhesives we use are highly resistant to ageing, light and temperatures from -20°C to +100°C. We only use double-sided adhesives from the best brands on the market, whose names are indicated during the offer phase.

8. CUSTOMER CARE

For anything not directly reported in this Technical Data Sheet, MyP Magnetica Italiana s.r.l. makes its Commercial and Technical Offices available to advise you on the material that best suits your needs and to support new projects and/or requests.

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+39 02 83595060

*The values of the parameters reported and marked with ** are guaranteed and certified by MyP Magnetica Italiana s.r.l.. Additional values can be supplied, guaranteed and certified only, and exclusively, subject to agreement with the Commercial Office of MyP Magnetica Italiana s.r.l..*

Note: what is reported in this sheet is the result of direct observations and practical experiences. However, since it is not possible to have and keep under control all the conditions and all the operating parameters at the user's premises, MyP Magnetica Italiana s.r.l. does not assume responsibility for the improper use of such information.