

Fine particles for a fine future.



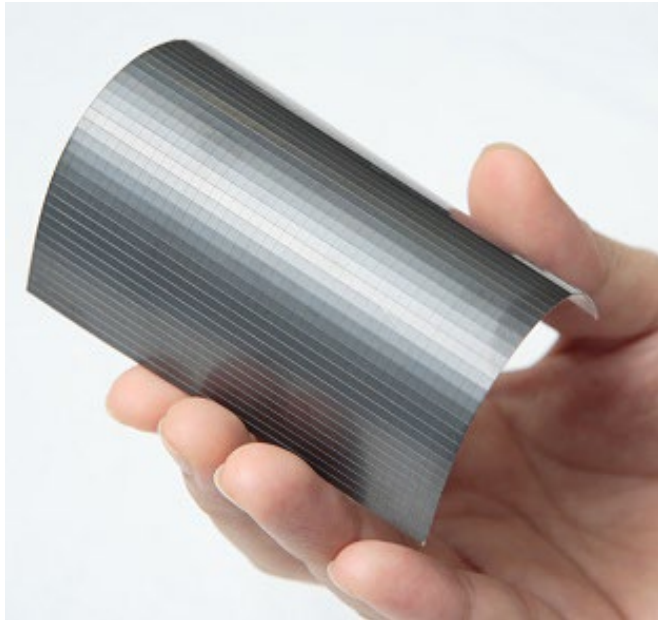
TODA KOGYO CORP.

Flexible Ferrite Sheet

(Magnetic sheet of sintered soft ferrite)

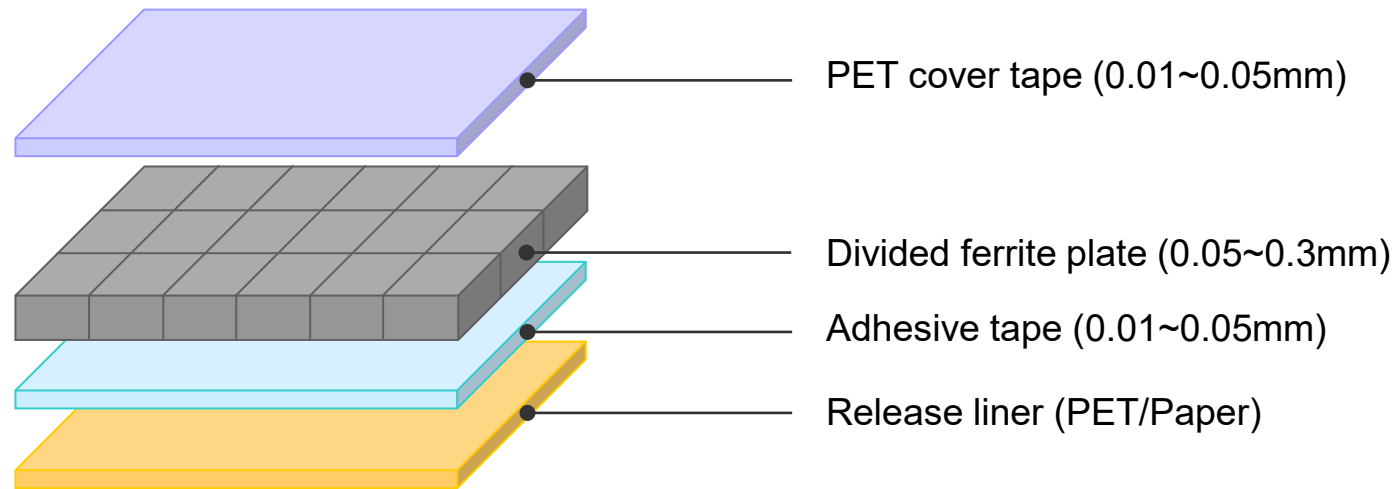
Features of Flexible Ferrite Sheet

Flexible Ferrite Sheet (FLX series) is a sintered Ni-Zn-Cu ferrite magnetic sheet with high permeability and low loss, based on soft ferrite technologies of TODA KOGYO.



- ✓ **High μ' & Low μ''**
High magnetic permeability and low magnetic loss resulting in excellent communication characteristic and charging efficiency.
- ✓ **High Flexibility**
Bendable and do not degrade its magnetic properties.
- ✓ **Very Thin**
The thickness can be made as thin as 45um, making it suitable for devices that require low profile.

Structure of Flexible Ferrite Sheet



Optional fabrication:

- ✓ Laminated with many kinds of film.
- ✓ Complicated shape.
- ✓ Adjustment to requested μ' .
- ✓ Enable reflow soldering with heat-resistant tape.

Product type

FLX series are classified into three types according to frequency.

a) **13.56MHz type**

Application: RFID, NFC, FeliCa, WPT[※], etc.

b) **100kHz type**

Application: WPT[※](Qi), Magnetic shielding, RFID, etc.

c) **6.78MHz type**

Application: WPT(AirFuelTM), etc.

※WPT : Wireless Power Transfer

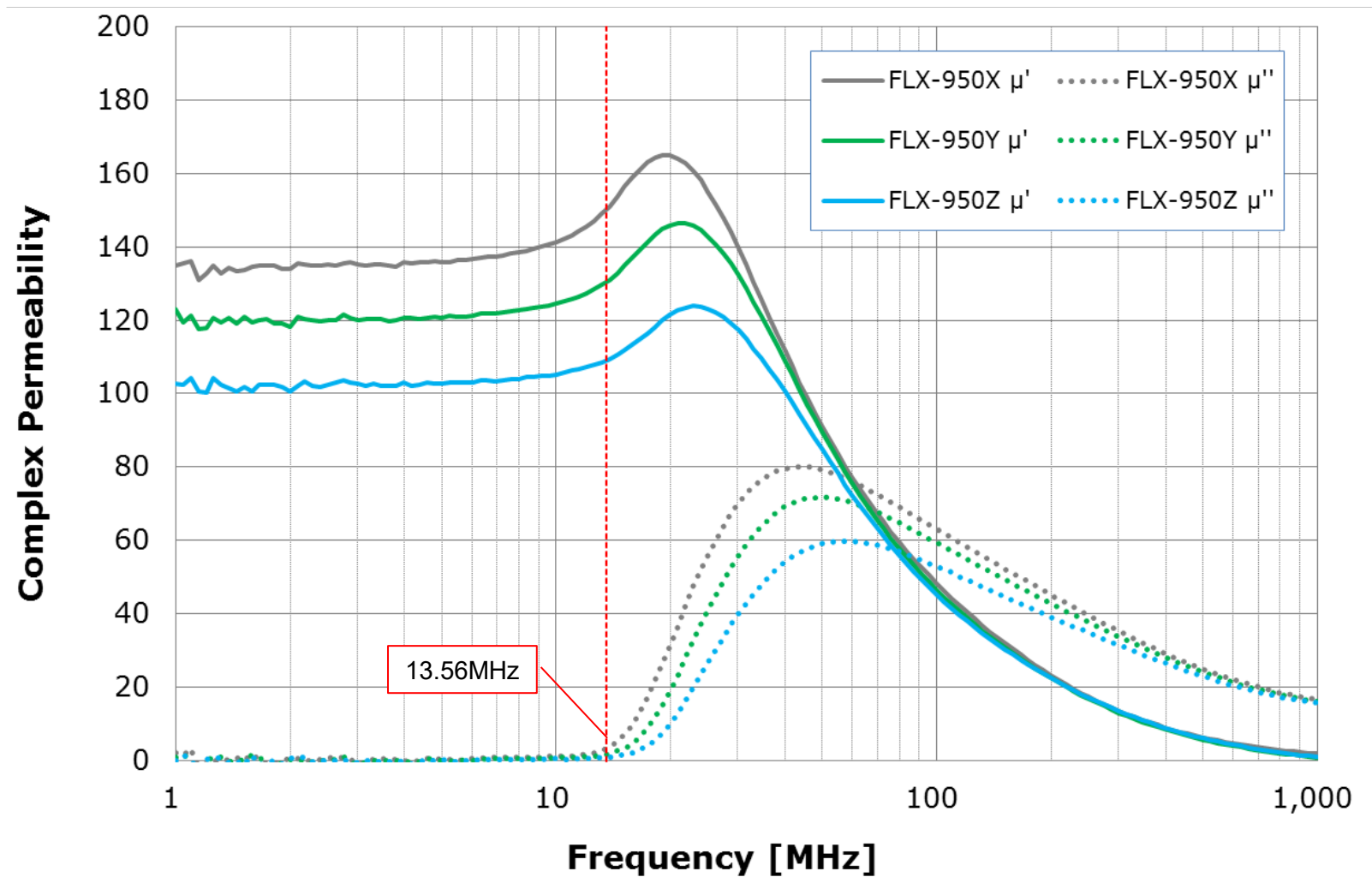
Typical properties

For 13.56MHz

GRADE	FLX-950X	FLX-950Y	FLX-950Z
Material	Ni-Zn-Cu Ferrite	Ni-Zn-Cu Ferrite	Ni-Zn-Cu Ferrite
Max. Size (mm)	135X135	135X135	135X135
Thickness (mm)	0.05~0.30	0.05~0.30	0.05~0.30
μ' at 13.56MHz	150	130	110
μ'' at 13.56MHz	3	2	1
Environment	RoHS/Halogen free	RoHS/Halogen free	RoHS/Halogen free

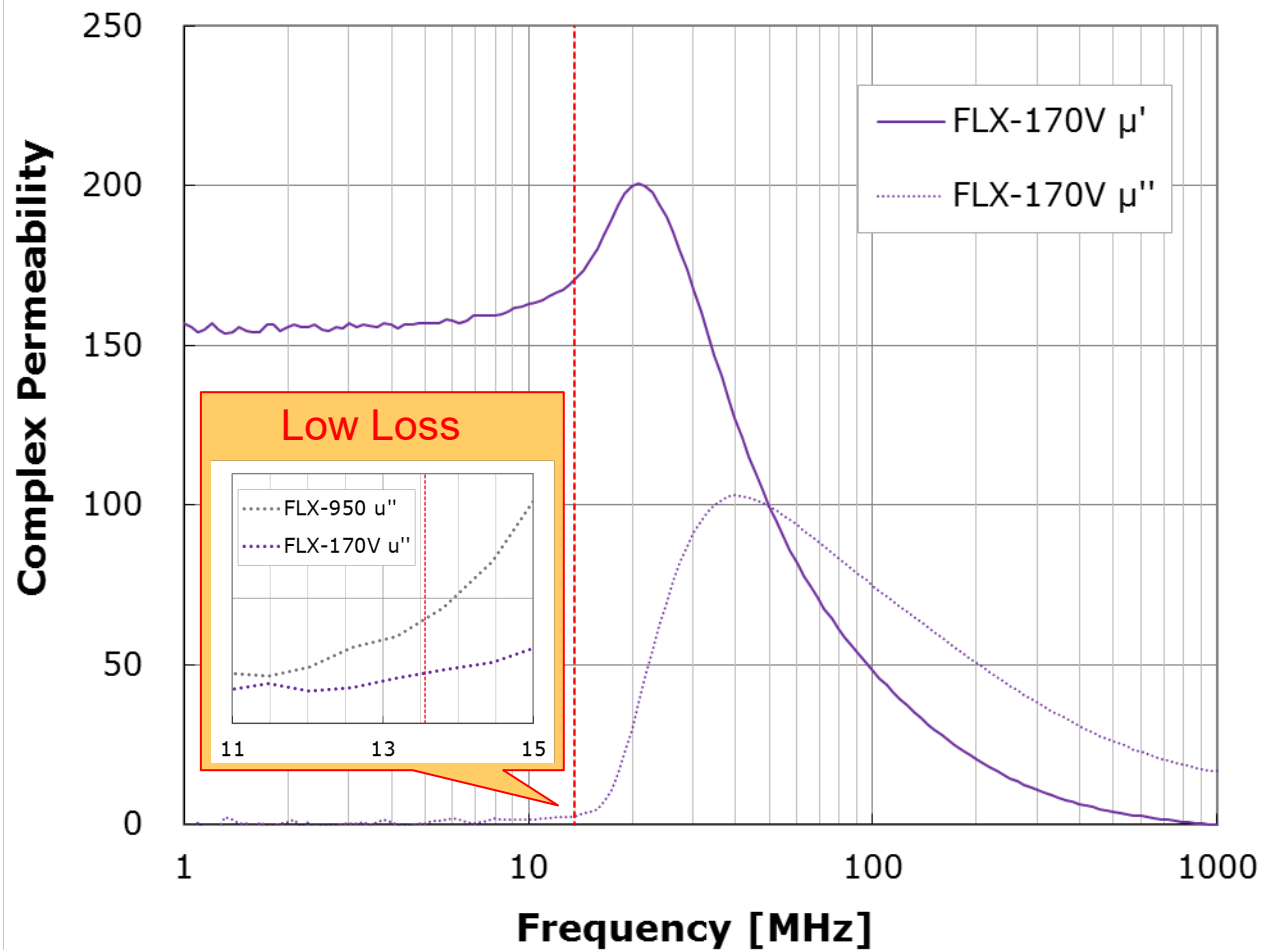
Typical properties

Permeability vs frequency of 13.56MHz type



Typical properties

For 13.56MHz (high μ' & low loss type)



GRADE	FLX-170V
Material	Ni-Zn-Cu Ferrite
Max. Size (mm)	135X135
Thickness (mm)	0.05~0.30
μ' at 13.56MHz	170
μ'' at 13.56MHz	2.5
Environment	RoHS/Halogen free

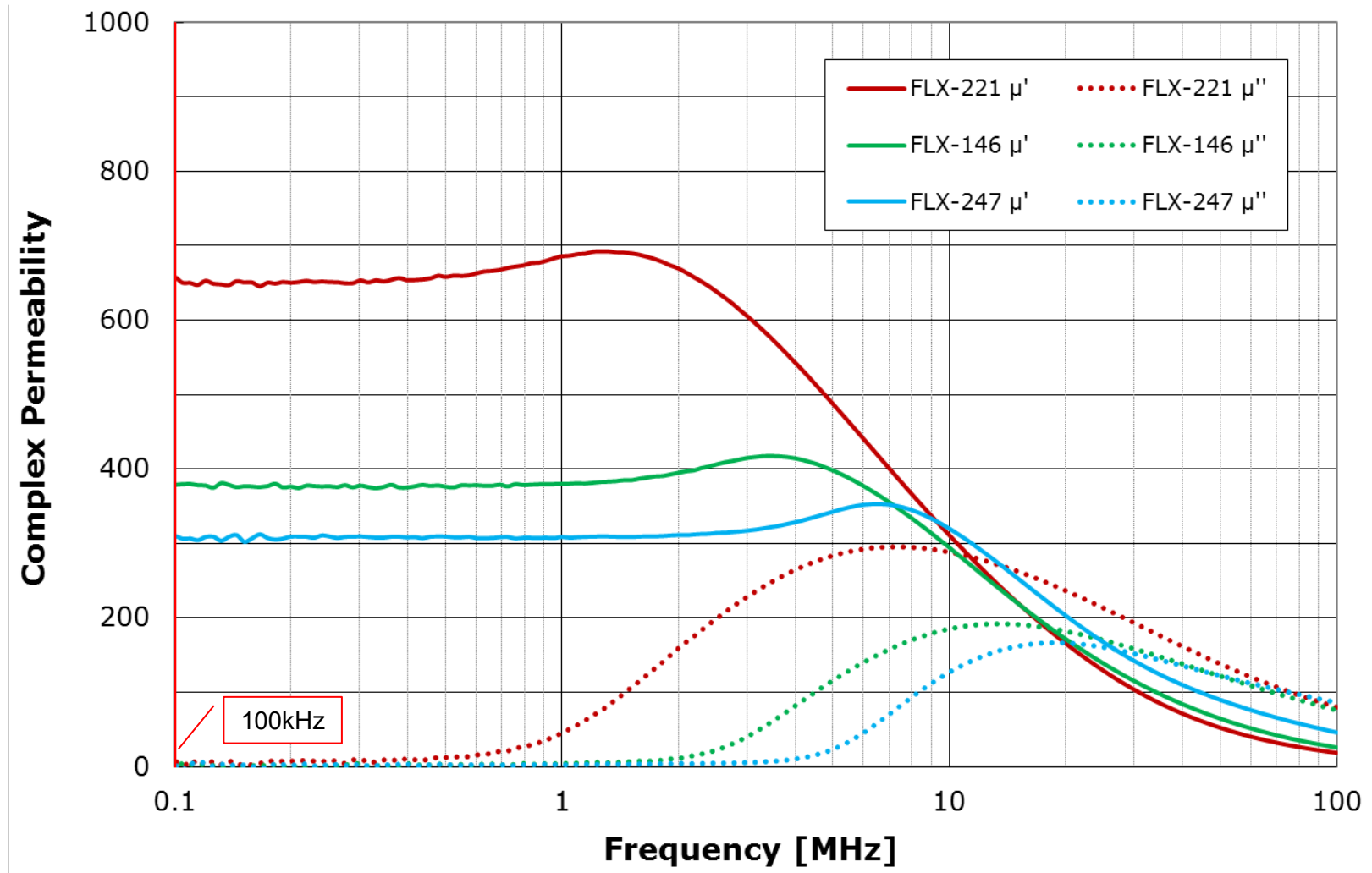
Typical properties

For 100kHz

GRADE	FLX-221	FLX-146	FLX-247
Material	Ni-Zn-Cu Ferrite	Ni-Zn-Cu Ferrite	Ni-Zn-Cu Ferrite
Max. Size (mm)	135X135	135X135	135X135
Thickness (mm)	0.05~0.30	0.05~0.30	0.05~0.30
μ' at 100kHz	660	380	310
Bm (mT)	252	256	307
Pcv (MW/m ³)	4	7	11
Environment	RoHS/Halogen free	RoHS/Halogen free	RoHS/Halogen free

Typical properties

Permeability vs frequency of 100kHz type



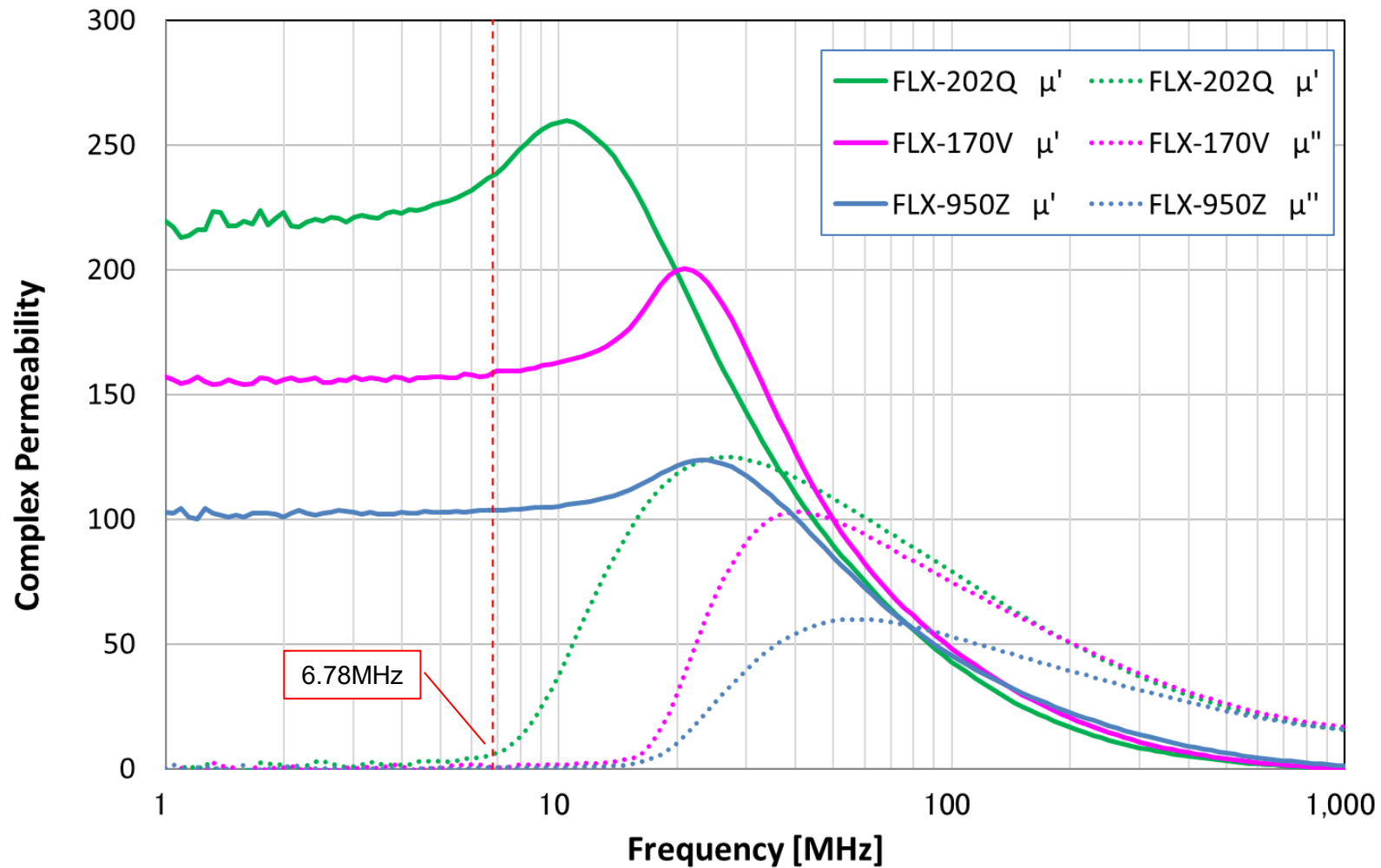
Typical properties

For 6.78MHz

GRADE	FLX-202Q	FLX-170V	FLX-950Z
Material	Ni-Zn-Cu Ferrite	Ni-Zn-Cu Ferrite	Ni-Zn-Cu Ferrite
Max Size (mm)	135X135	135X135	135X135
Thickness (mm)	0.05~0.30	0.05~0.30	0.05~0.30
μ' at 6.78MHz	220	160	110
μ'' at 6.78MHz	3.0	1.0	0.5
Environment	RoHS / Halogen free	RoHS / Halogen free	RoHS / Halogen free

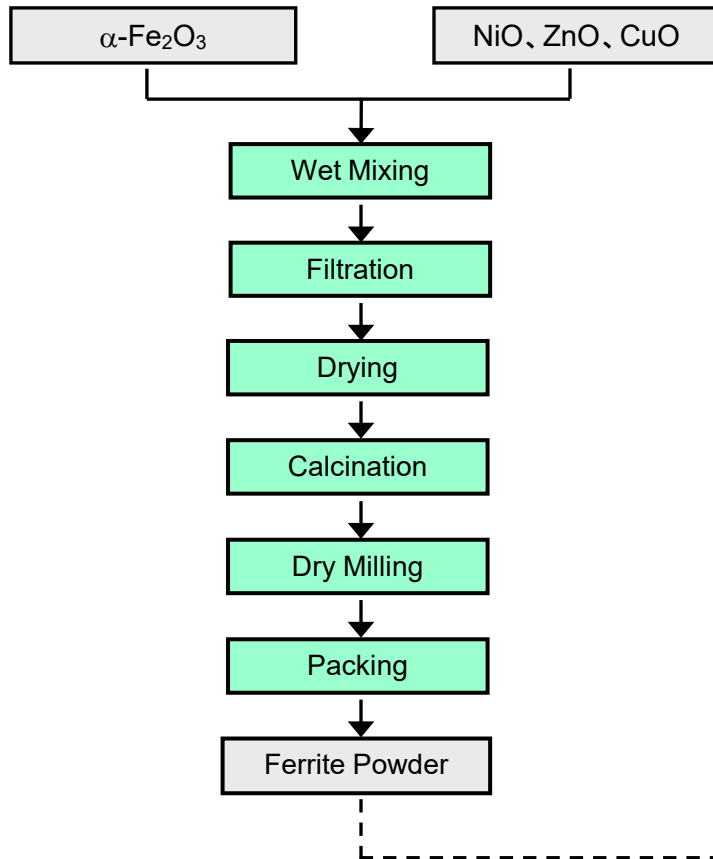
Typical properties

Permeability vs frequency of 6.78MHz type

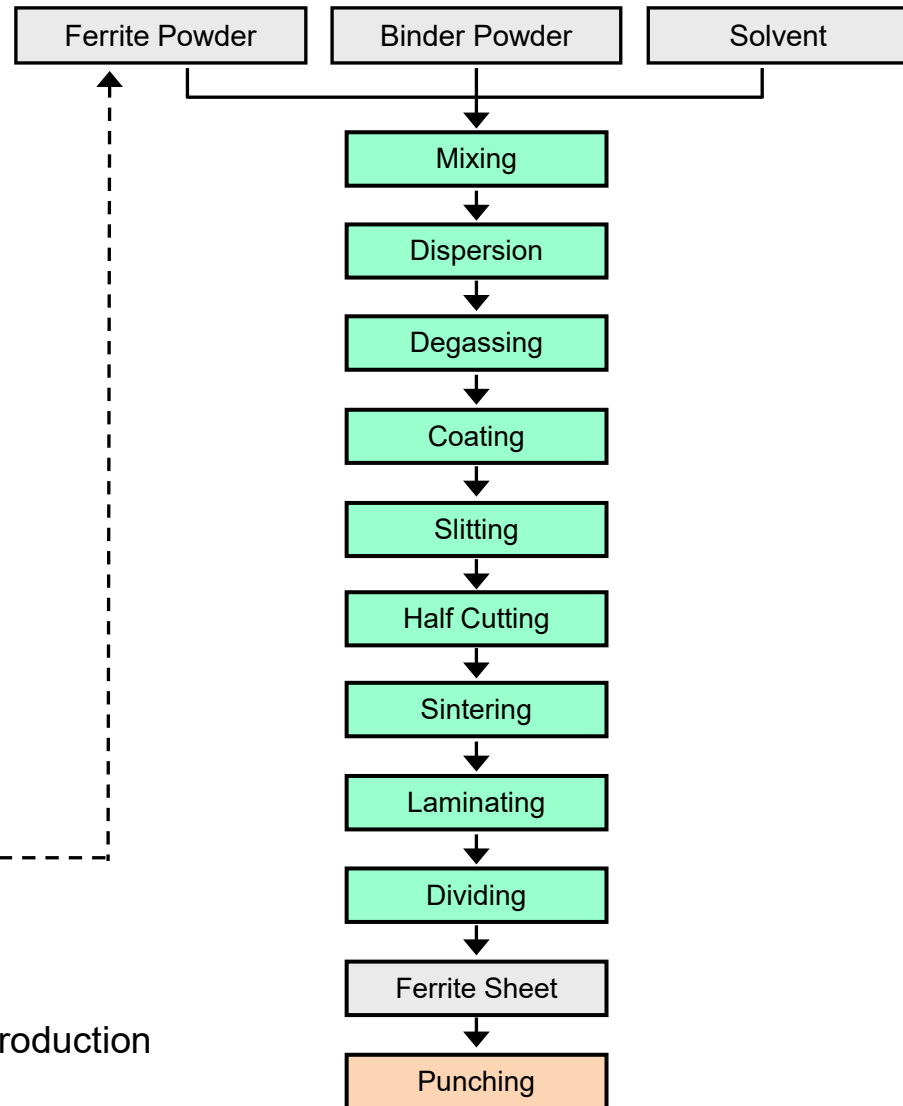


Manufacturing process flow

Ferrite powder process※



Ferrite sheet process※



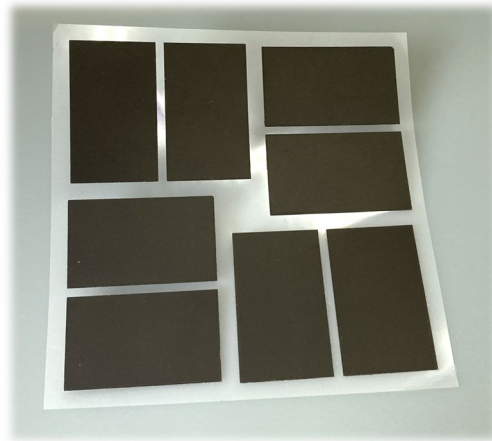
※FLX series are manufactured in an integrated production process from ferrite powder to ferrite sheet.

Shipping shape

In addition to the sheet shape, it is also possible to ship half-cut sheet that have been trimmed to the desired shape. Tape type are also available.



Sheet



Half-cut sheet



Tape (Reel)



TODA KOGYO CORP.

【Contact】

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