



**TWO AND THREE LAYER  
MASTER CURVES  
FOR SCHLUMBERGER SOUNDING  
INTERPRETATION**

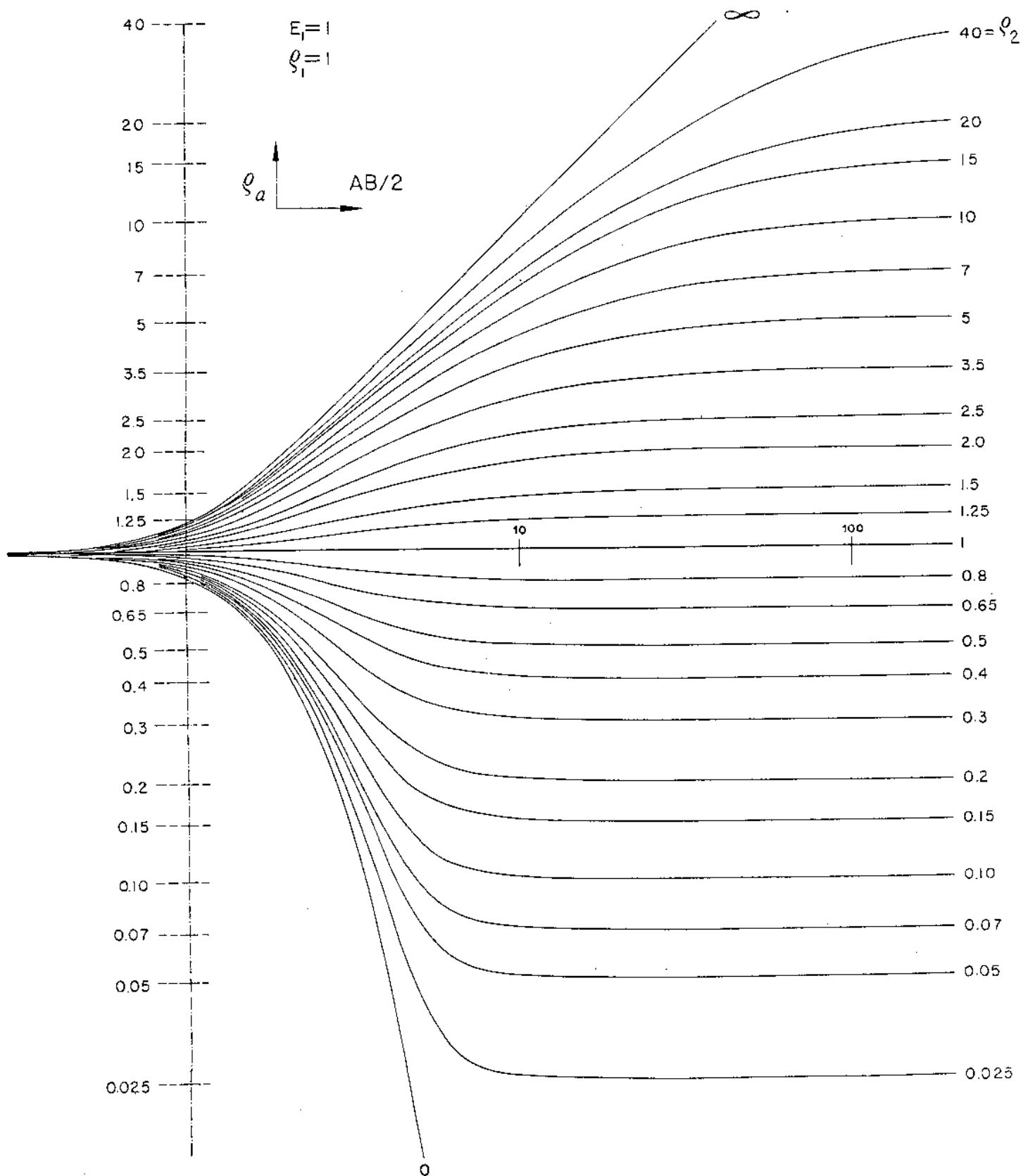
**From ORELLANA and MOONEY**

**IRIS Instruments**

**1, avenue Buffon, BP 6007, 45060 Orléans cédex 02, France**

**Tel : + 332 38 63 81 00 Fax : + 332 38 63 81 82**

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ORELLANA—MOONEY  
 MASTER CURVES FOR V.E.S.  
 CURVAS PATRON PARA S.E.V.

TWO — LAYER CURVES — CURVAS DE DOS CAPAS

# HOW TO USE THE THREE LAYER MASTER CURVES

The three layer master curves are classified in four parts according to their shapes :

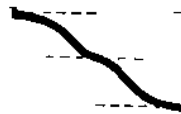
1 - The bowl type (diagrams H-1 to H-25)



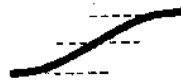
2 - The bell type (diagrams K-1 to K-25)



3 - The stair step down (diagrams Q-1 to Q-13)

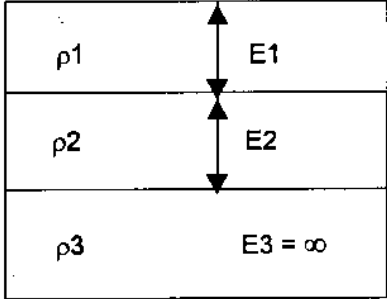


4 - The stair step up (diagrams A-1 to A-13)

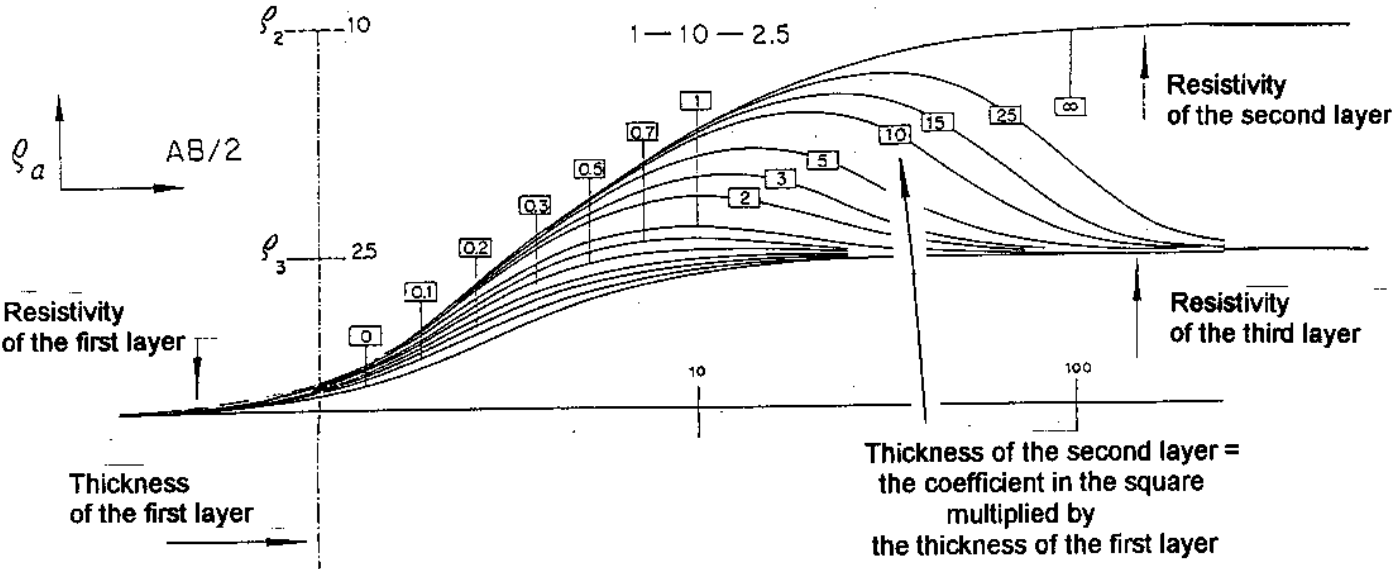


The parameters of the three layer solution are :

- $\rho_1$  : resistivity of the first layer
- $\rho_2$  : resistivity of the second layer
- $\rho_3$  : resistivity of the third layer
- $E_1$  : thickness of the first layer
- $E_2$  : thickness of the second layer
- $E_1 + E_2$  : depth of the third layer

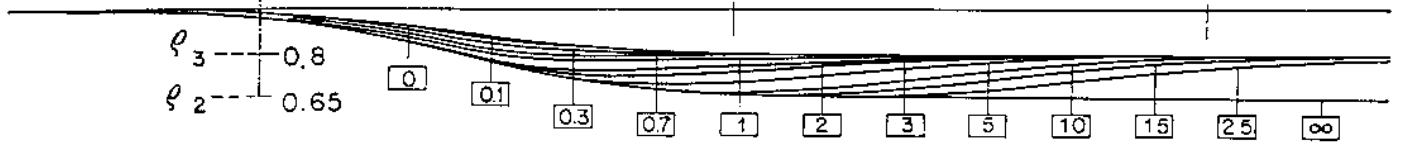


The field curve, plotted on a transparent paper has to be superposed on a curve of the diagram which fits it. Then, the values of the parameters  $\rho_1$ ,  $\rho_2$ ,  $\rho_3$ , and  $E_1$  can be read directly on the transparent paper according to the graphical indications mentioned in the example here under presented. The parameter  $E_2$  is obtained by multiplying the coefficient shown in the small square by the value of  $E_1$ .



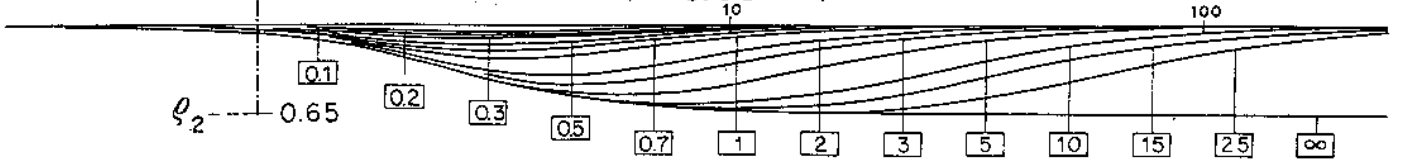
H-1

1 - 0.65 - 0.8



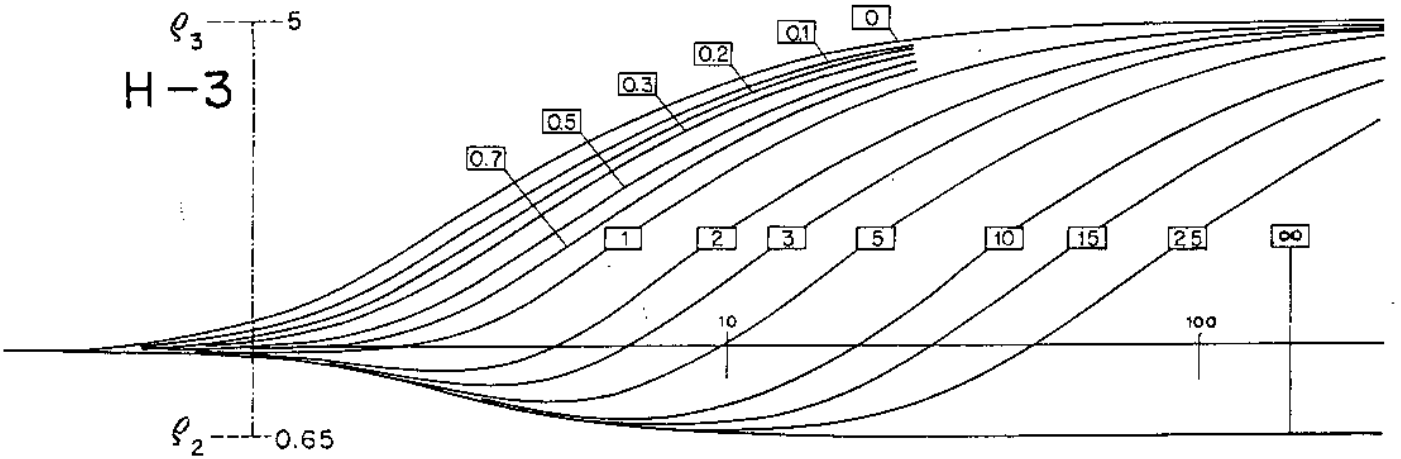
H-2

1 - 0.65 - 1



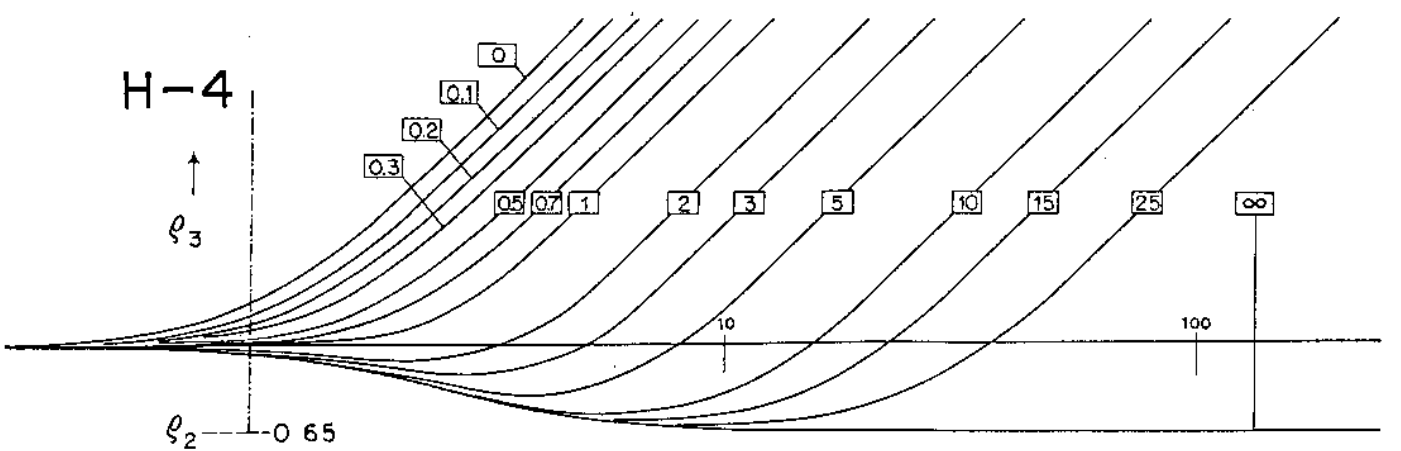
H-3

1 - 0.65 - 5



H-4

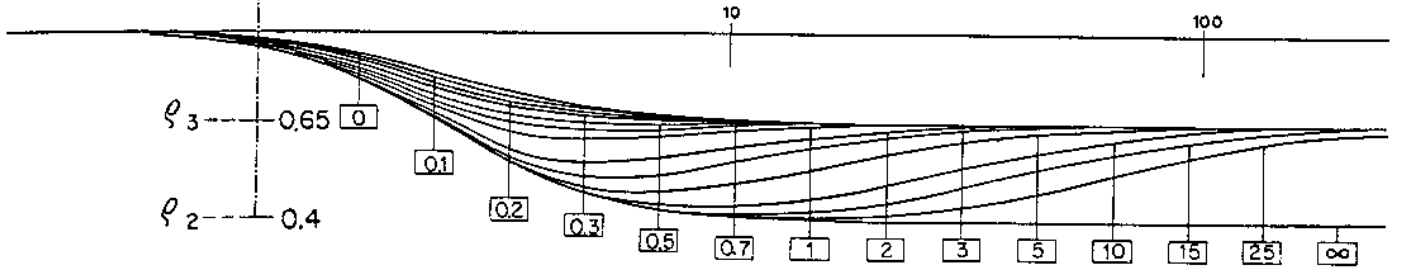
1 - 0.65 - infinity



$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

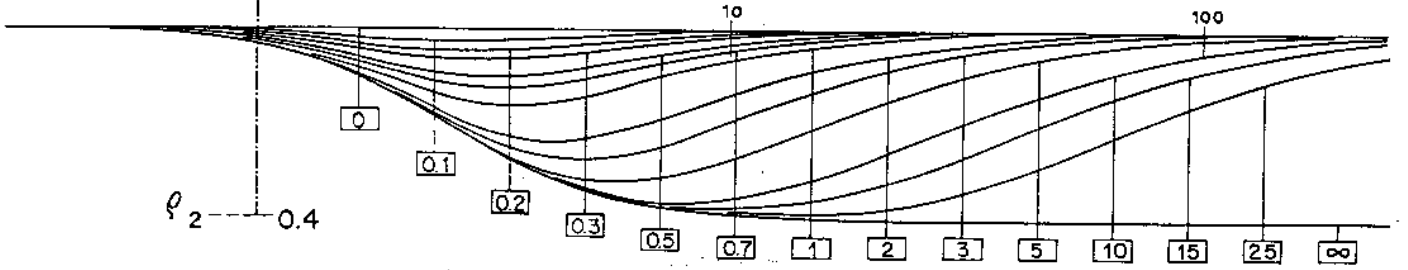
H-5

1-0.4-0.65



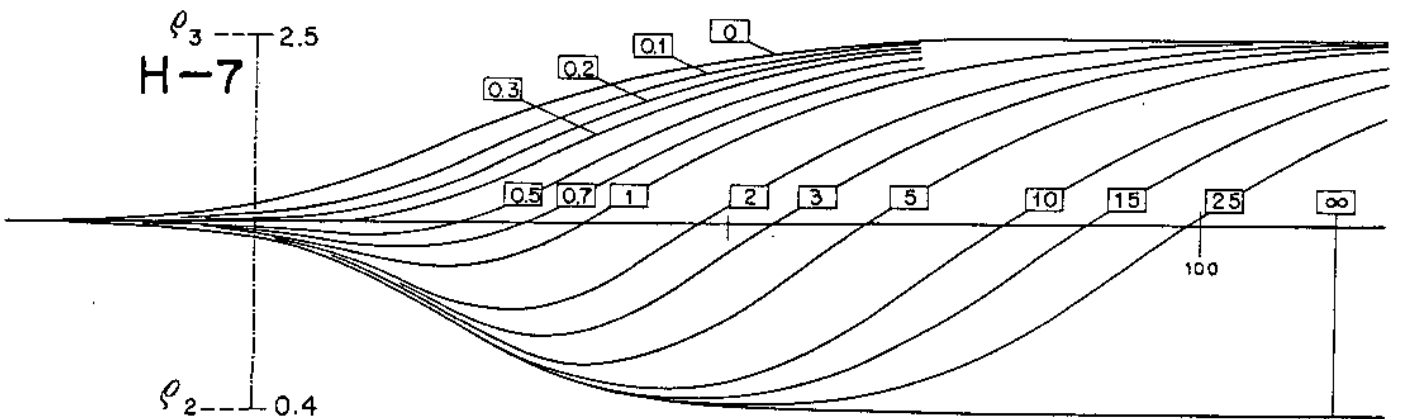
H-6

1-0.4-1

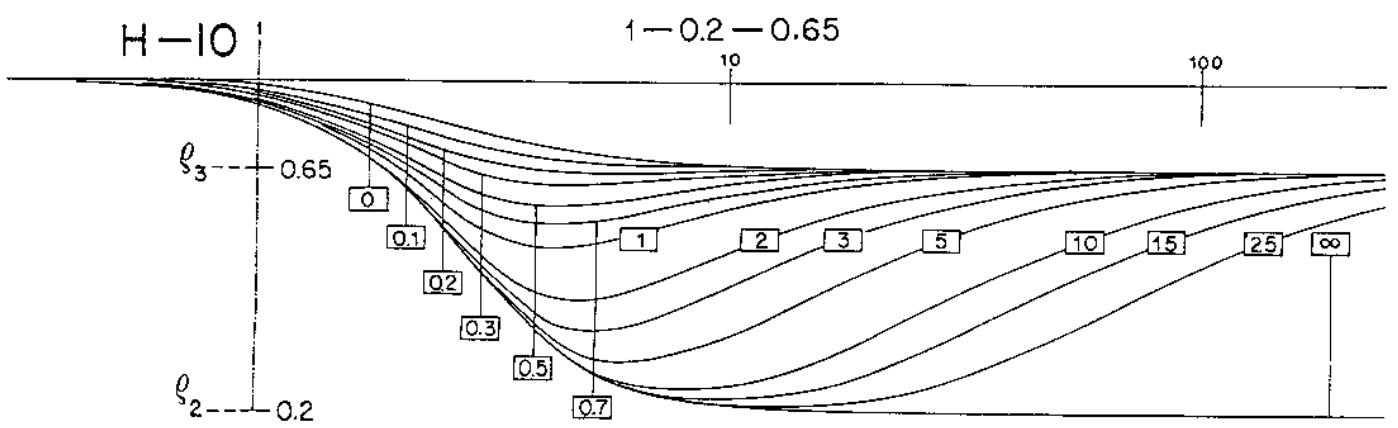
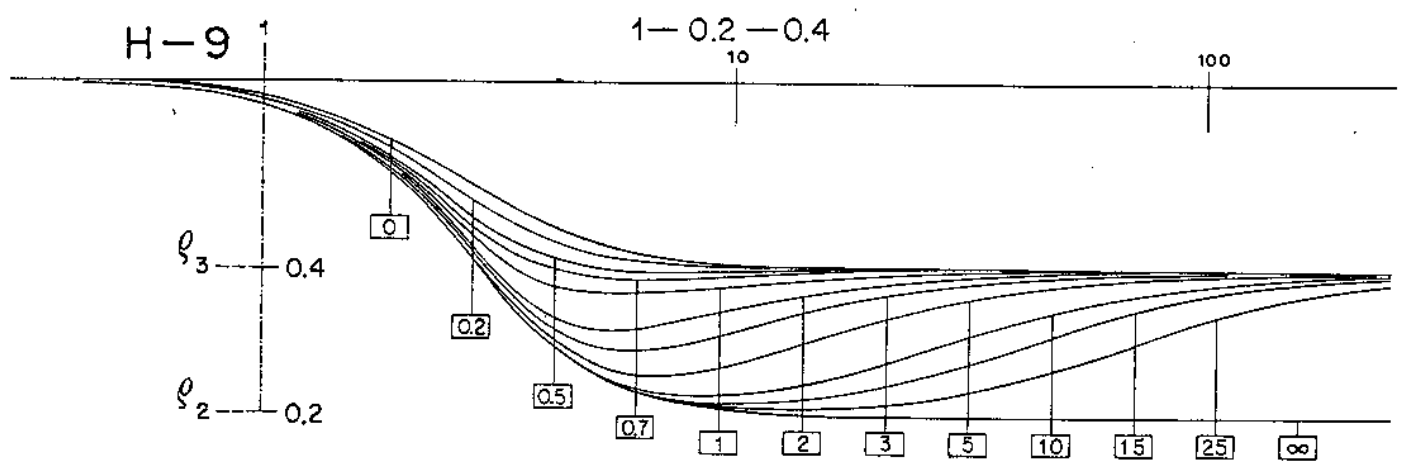
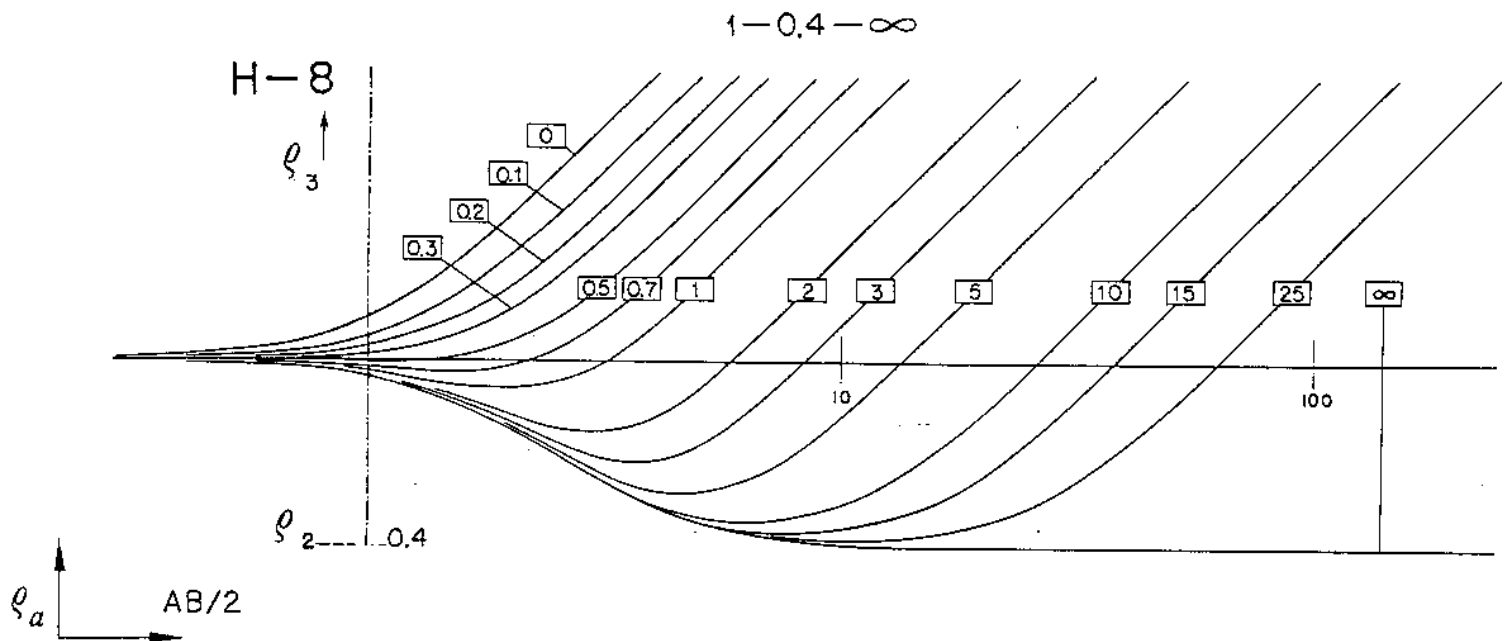


$\rho_a$  ↑  
 AB/2 →

1-0.4-2.5

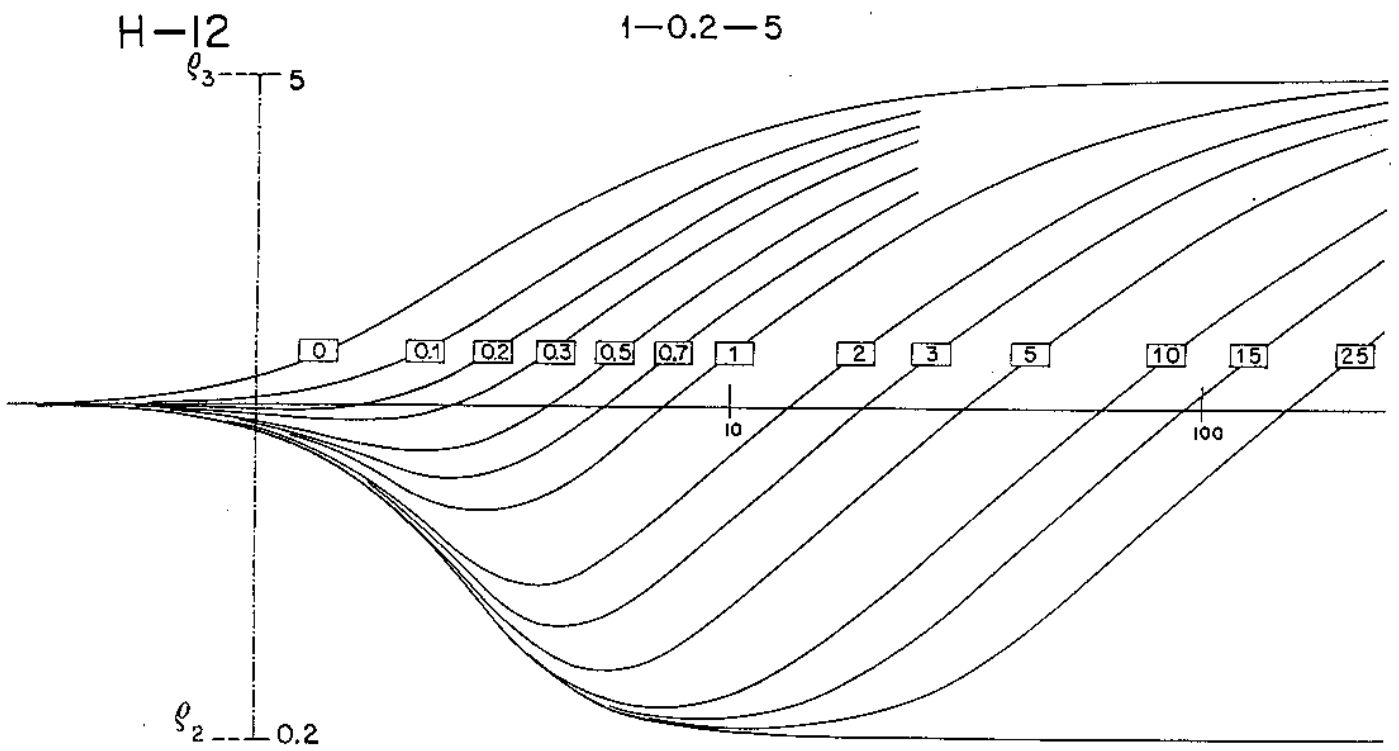
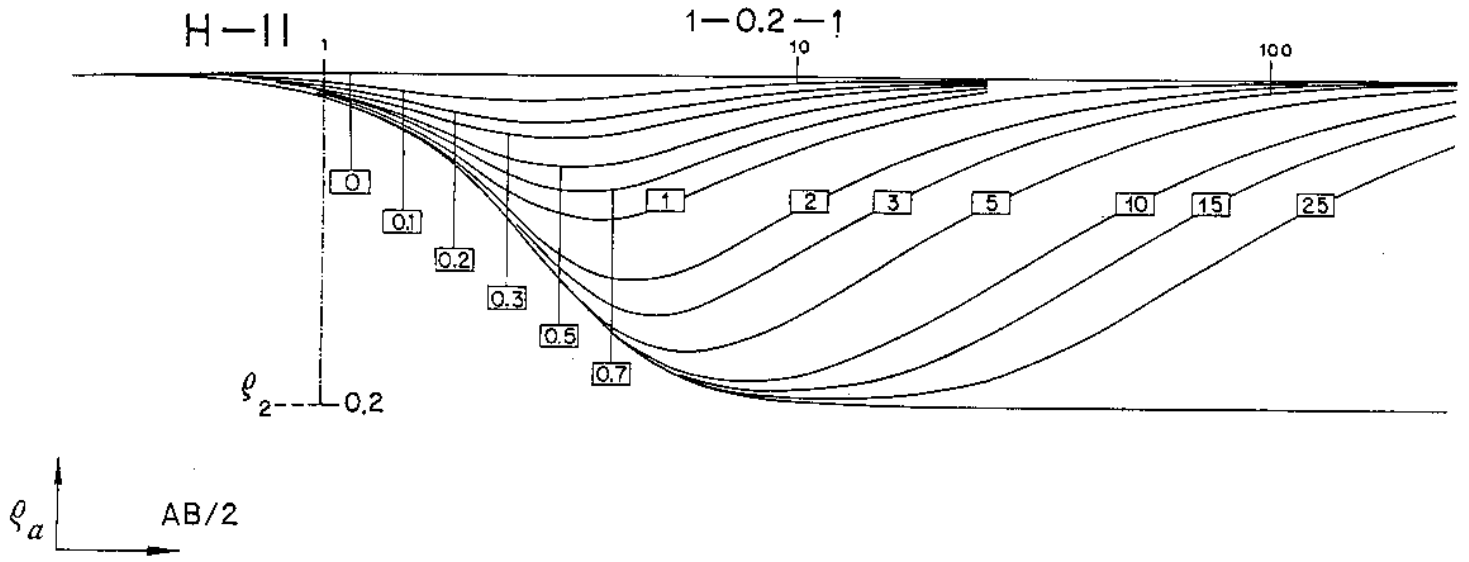


$$E_1 = 1; \rho_1 = 1; E_2 = \square$$



$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

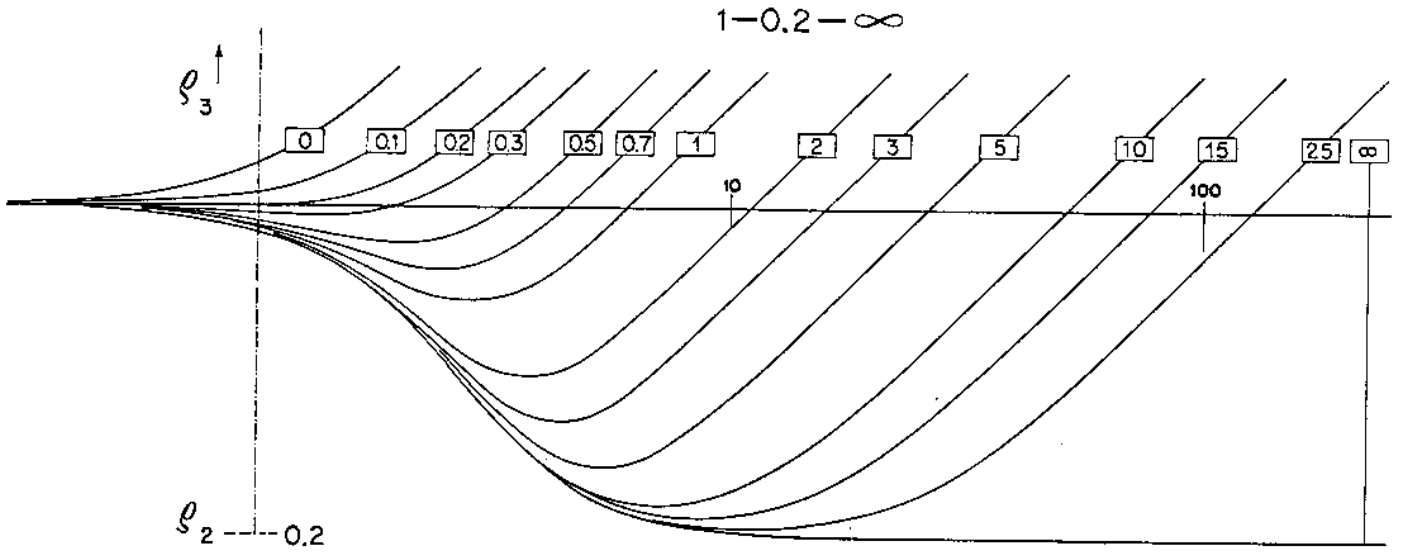
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 CURVAS PATRON PARA  $\nu_{ES}$



$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

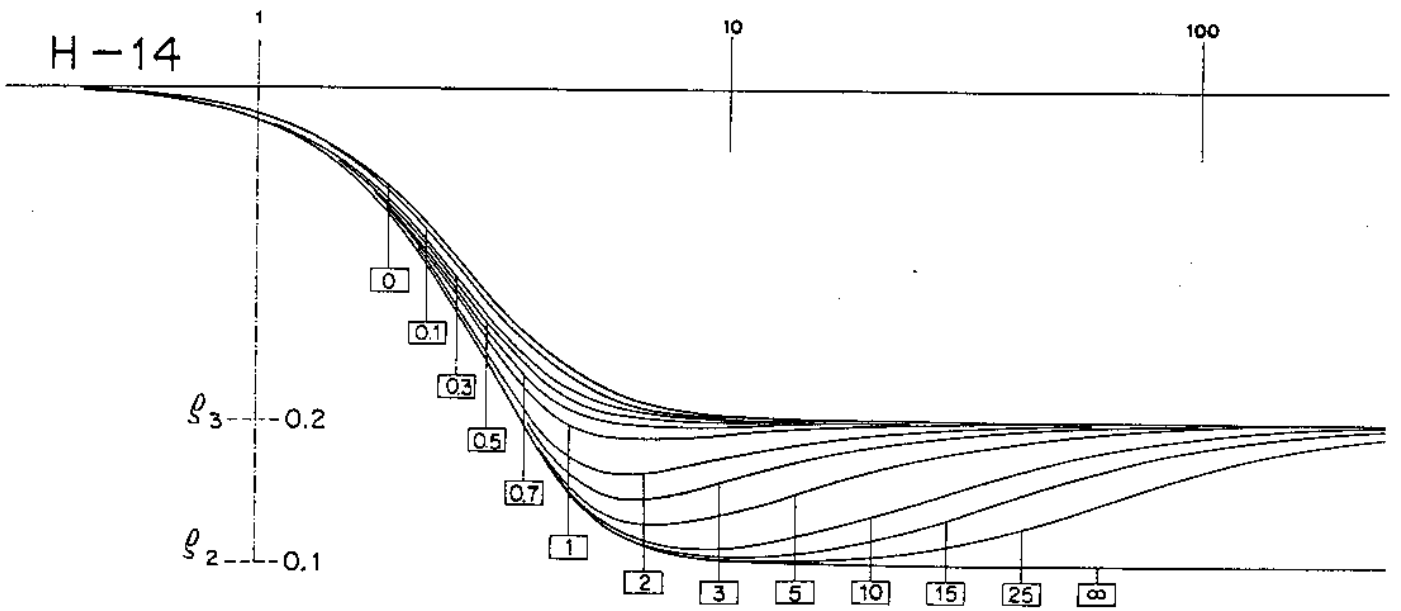
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 CURVAS PATRON PARA S.E.V.

H-13



$\nu_a$   $\rightarrow$  AB/2

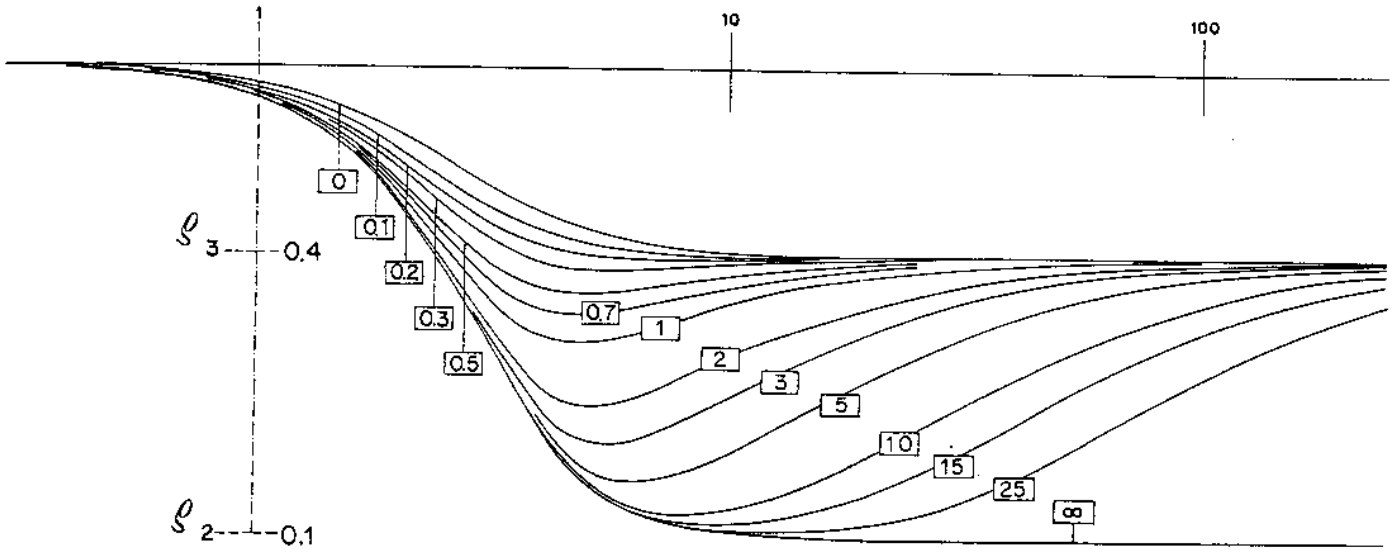
H-14



$E_1 = 1; \nu_1 = 1; E_2 = \square$

H-15

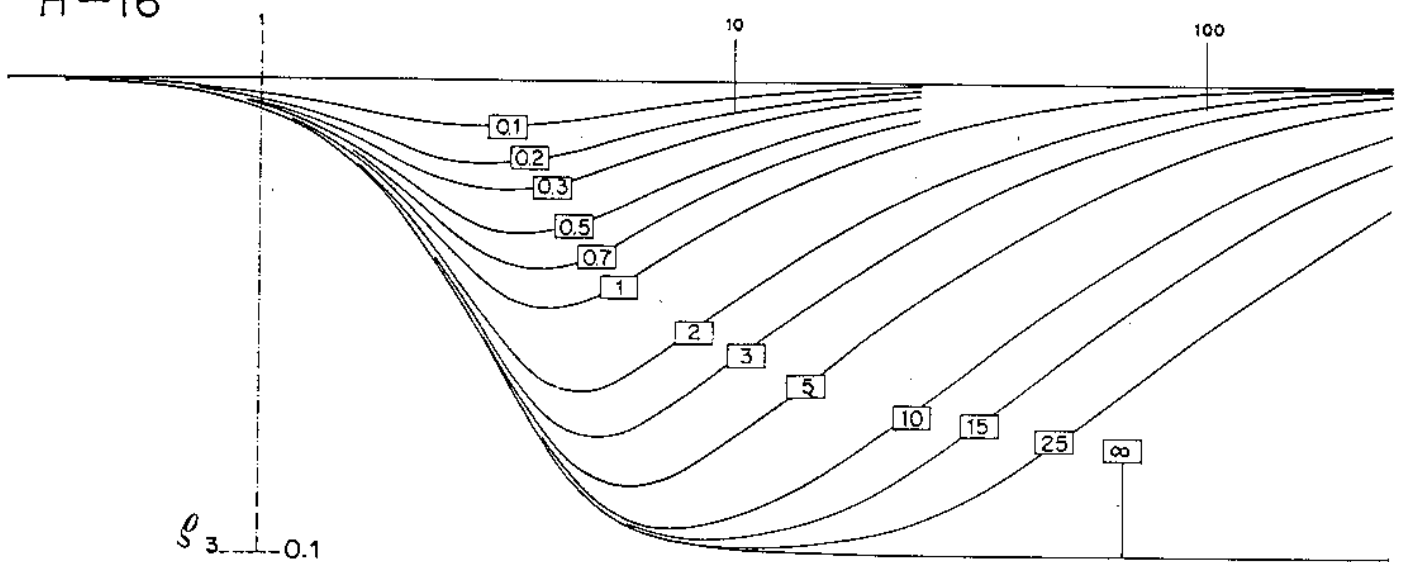
1-0.1-0.4



$\nu_a$   $\rightarrow$   $AB/2$

H-16

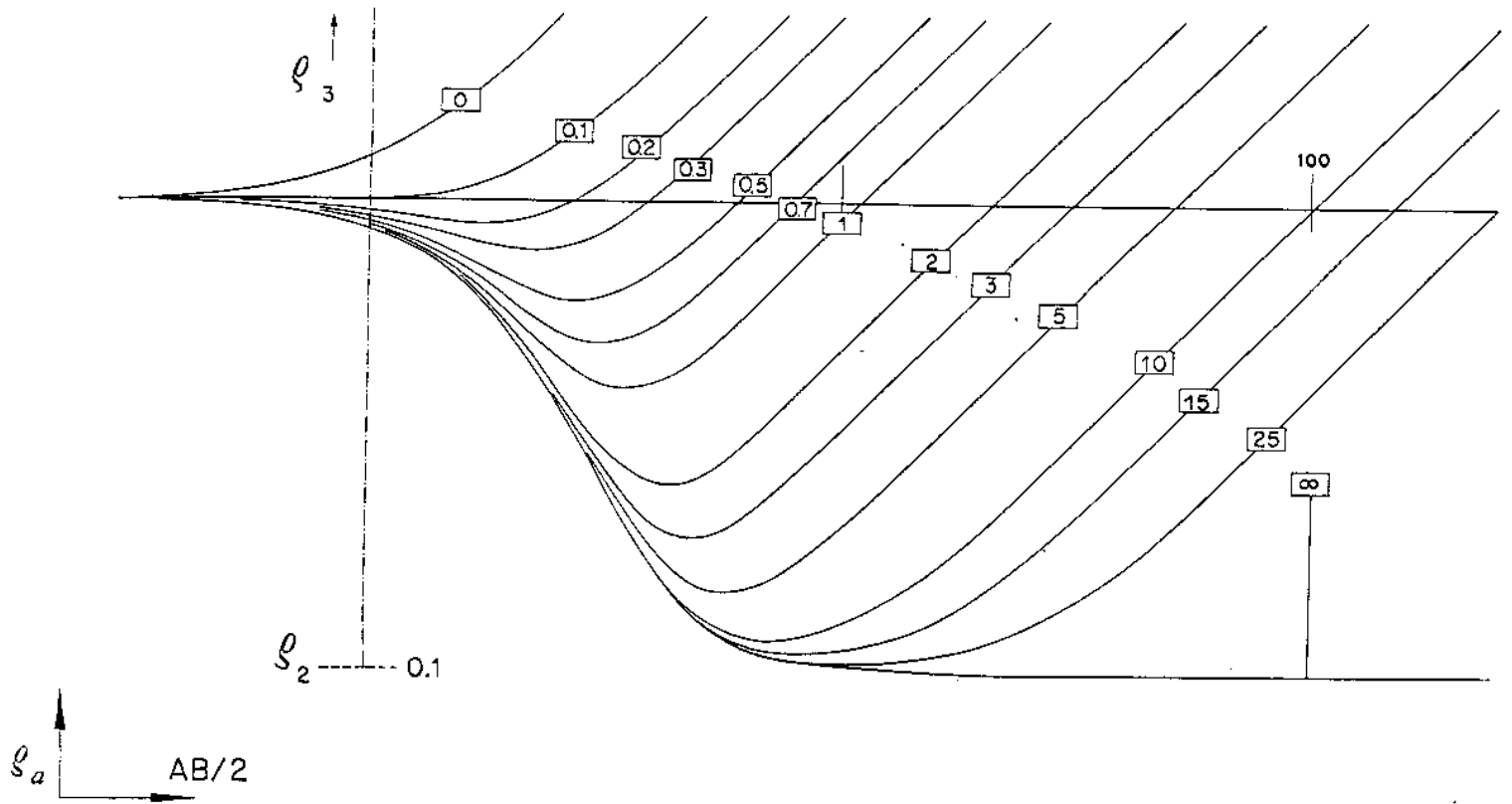
1-0.1-1



$E_1 = 1; \nu = 1; E_2 = \square$

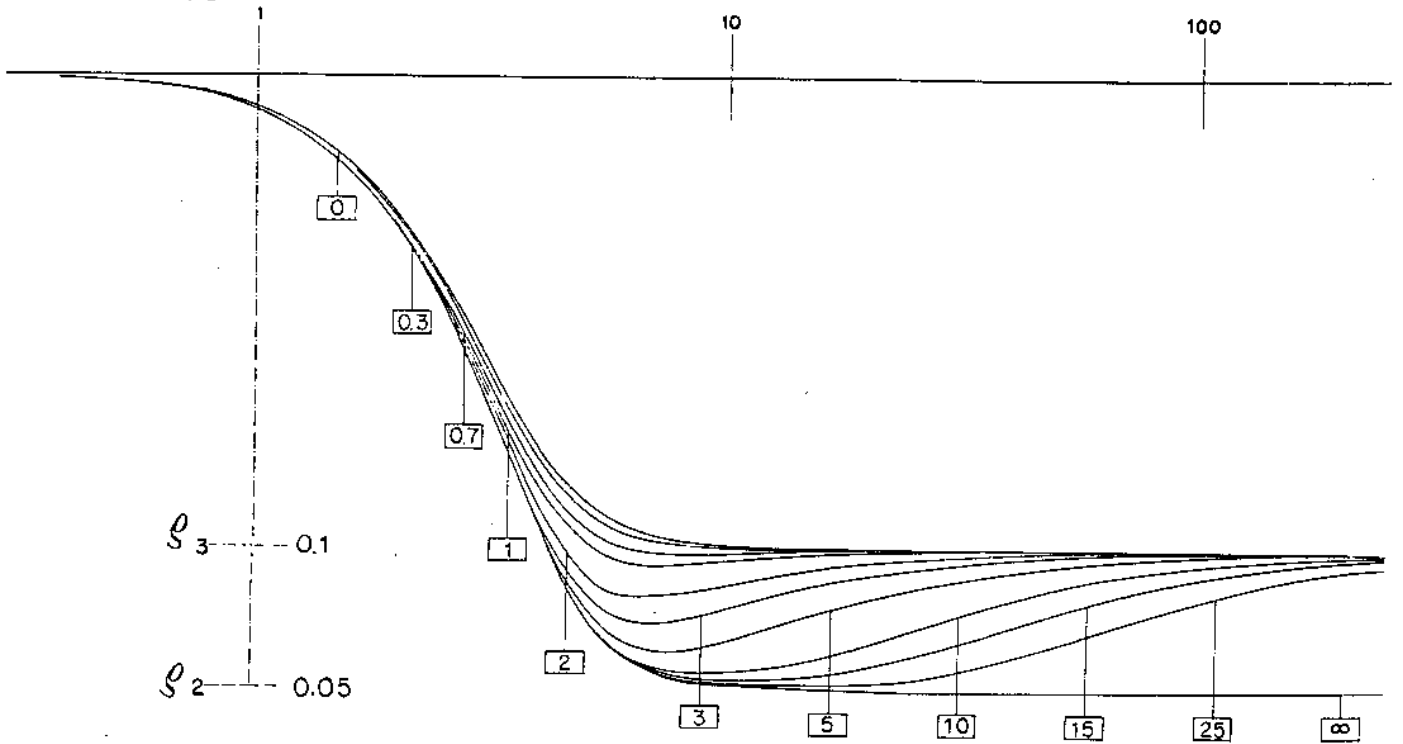
H-17

1-0.1-∞



H-18

1-0.05-0.1

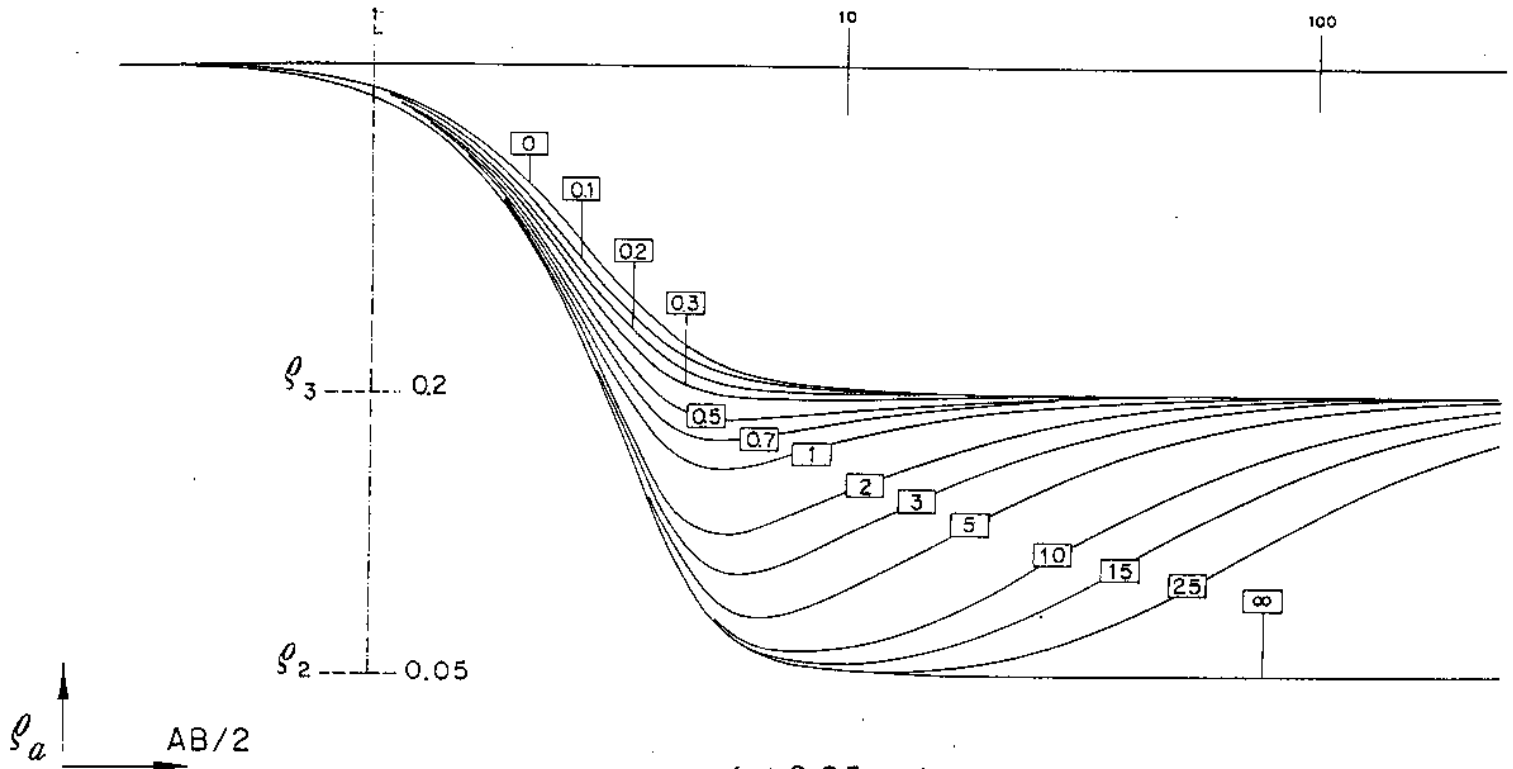


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$E_1 = 1; \rho_1 = 1; E_2 = \square$

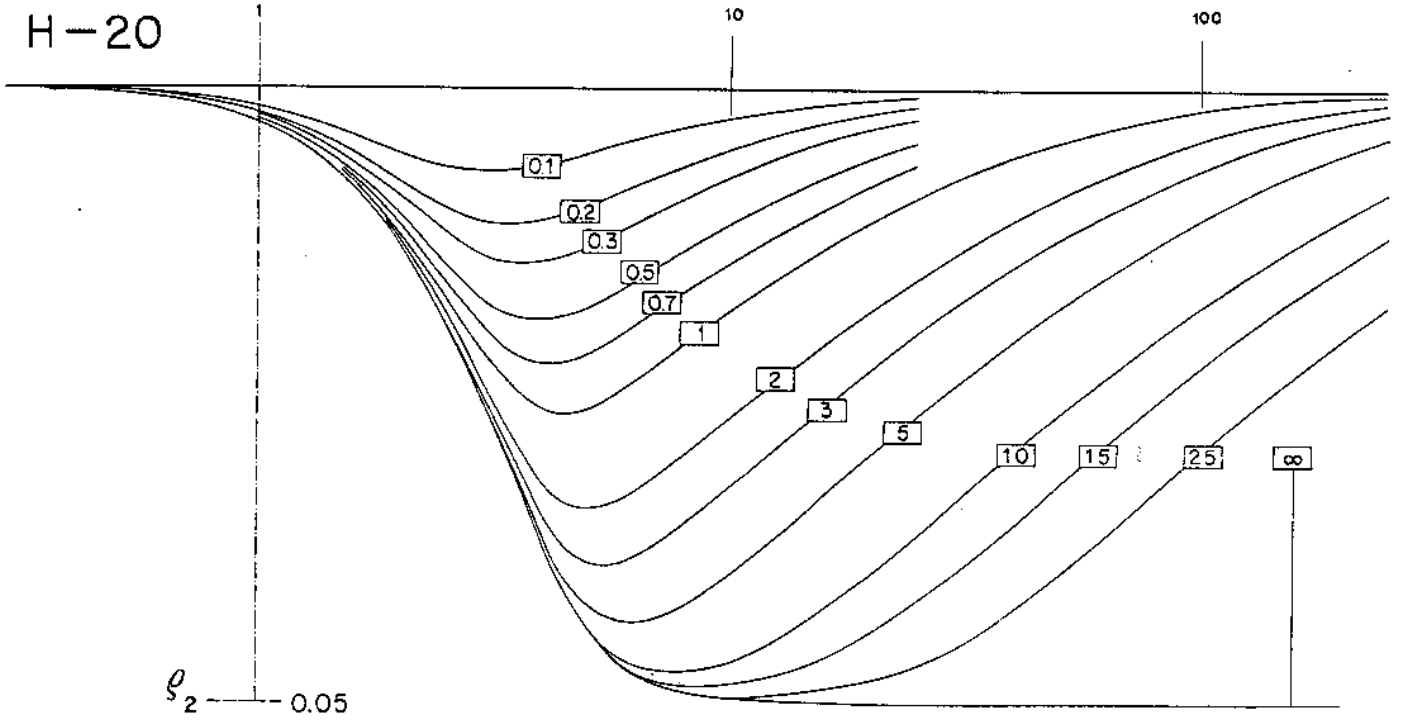
H-19

1-0.05-0.2



H-20

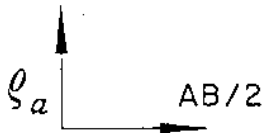
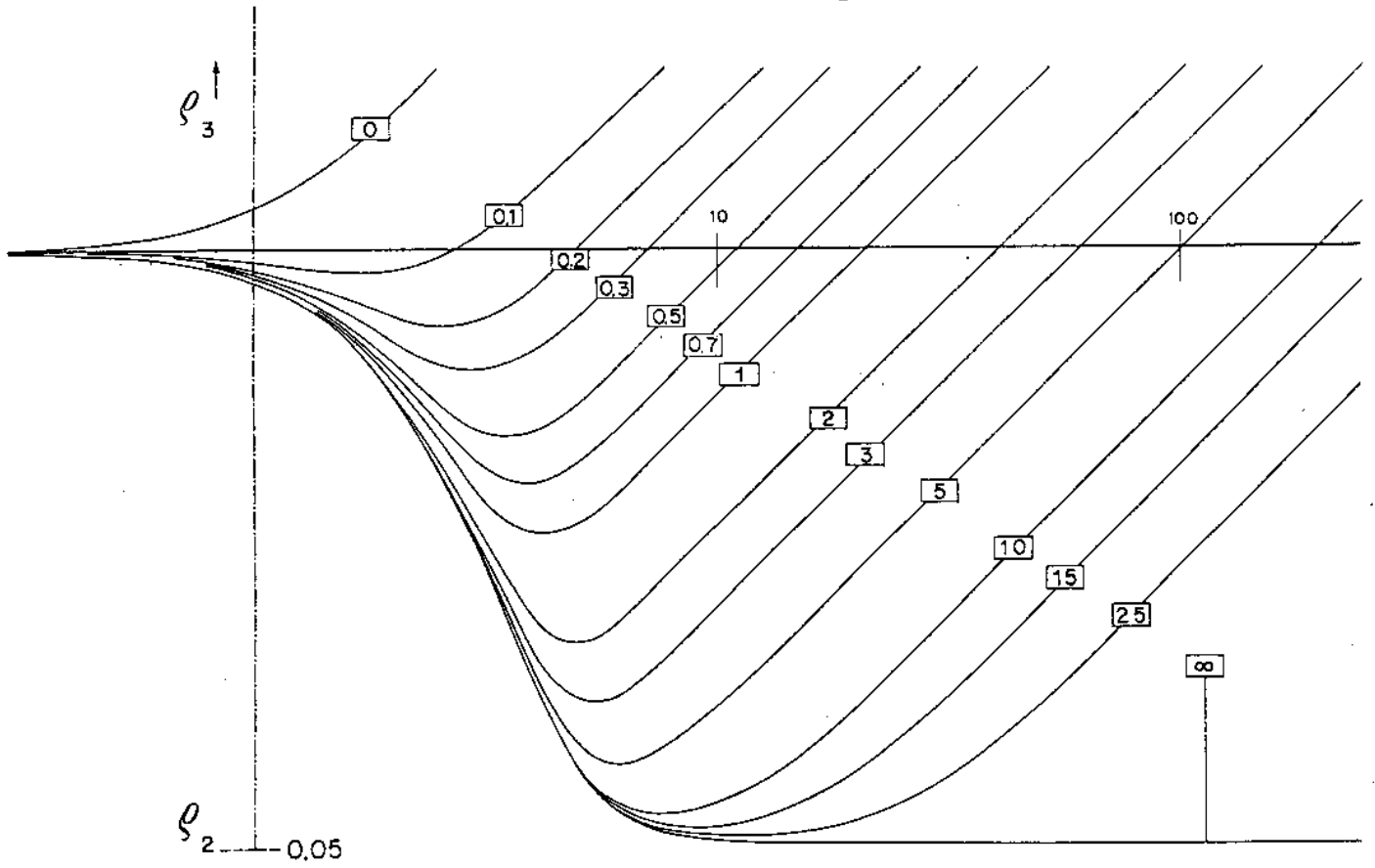
1-0.05-1



$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

H-21

1 - 0.05 - ∞

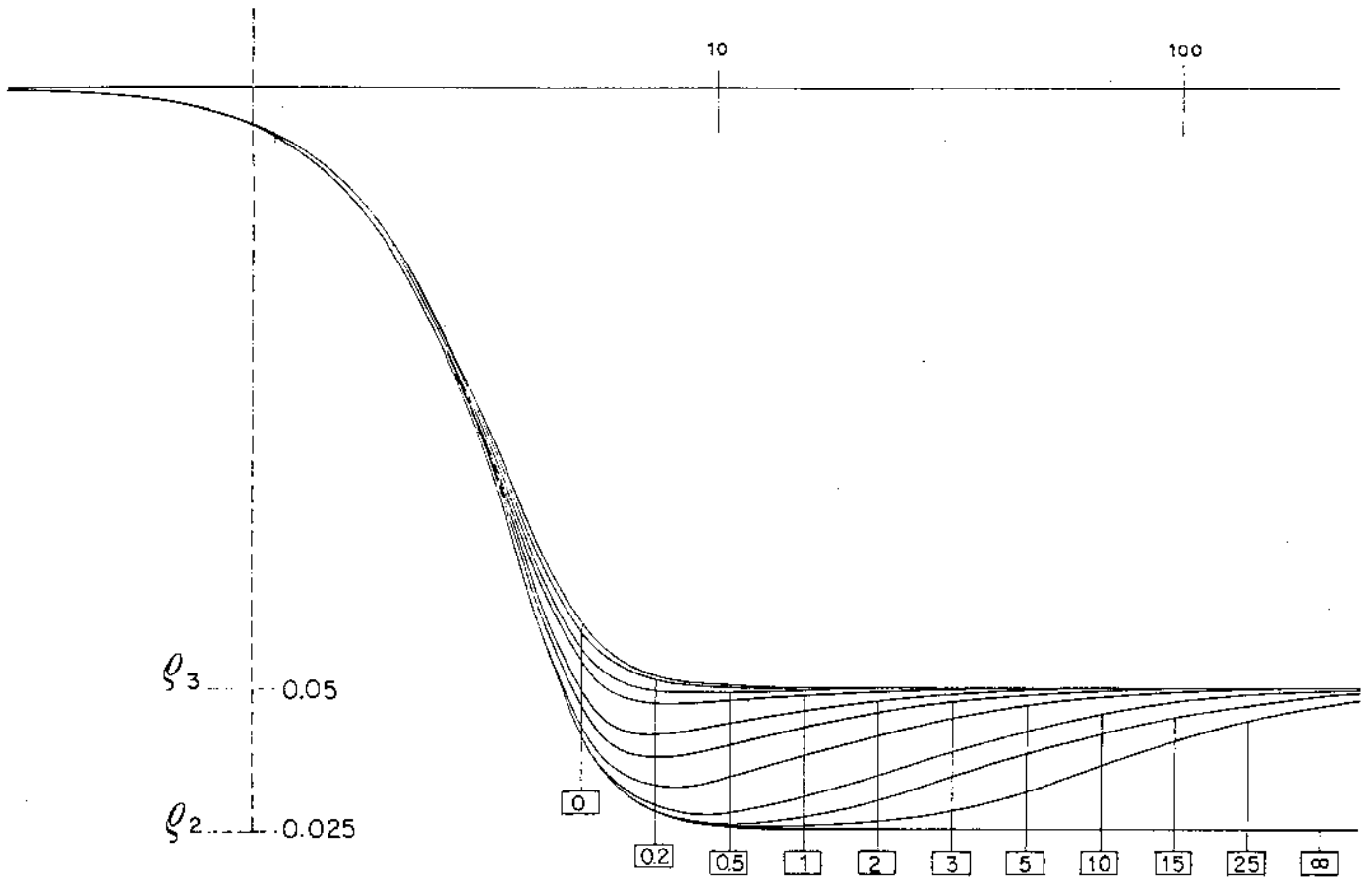


$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

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H-22

1-0.025-0.05

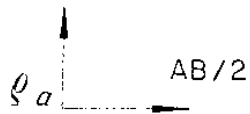
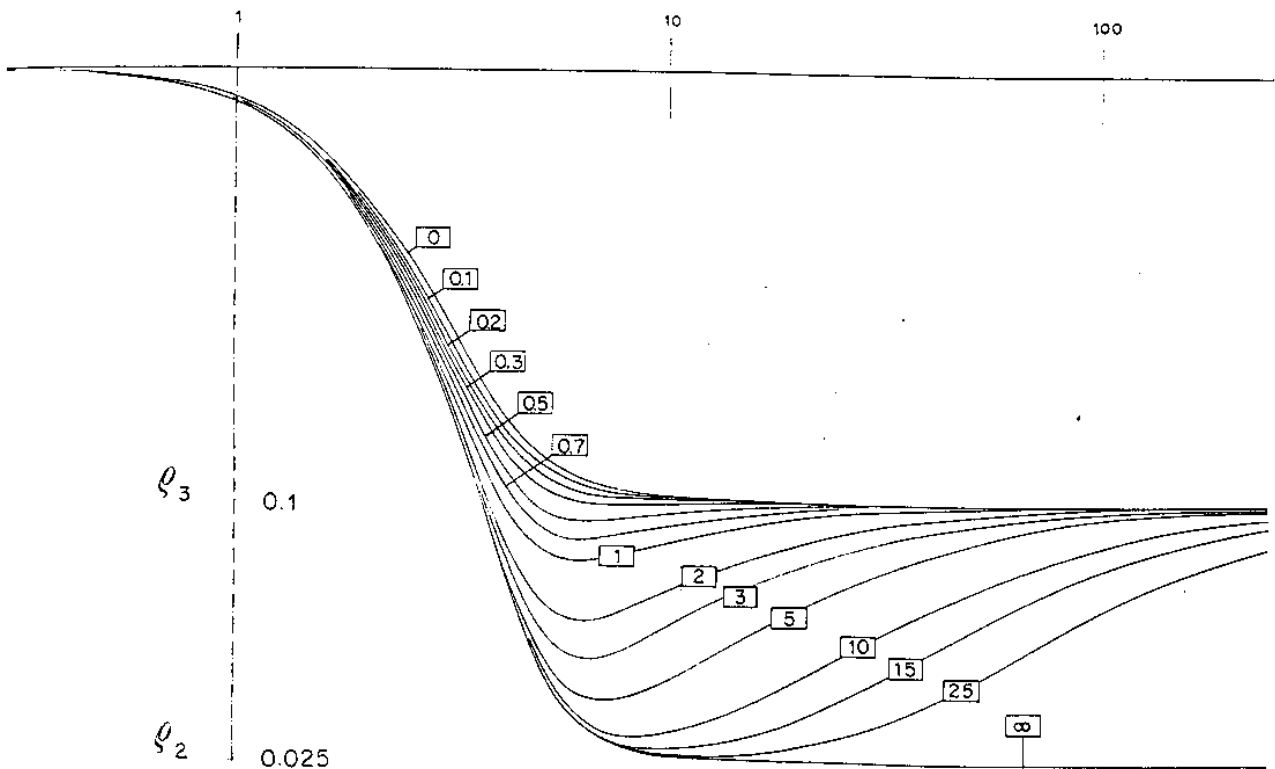


$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

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H-23

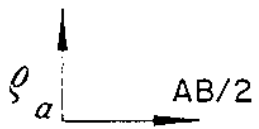
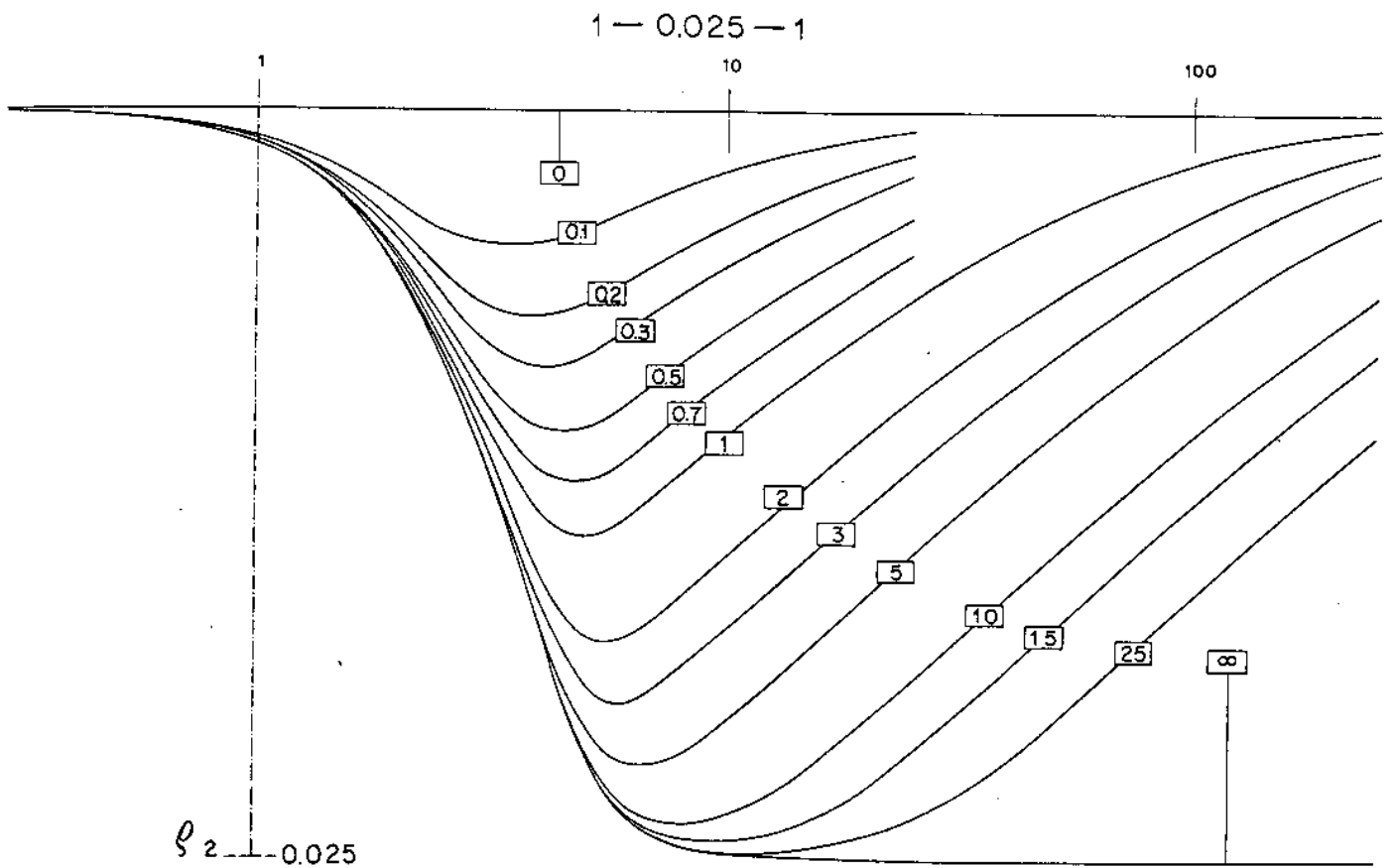
1-0.025-0.1



$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

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H-24

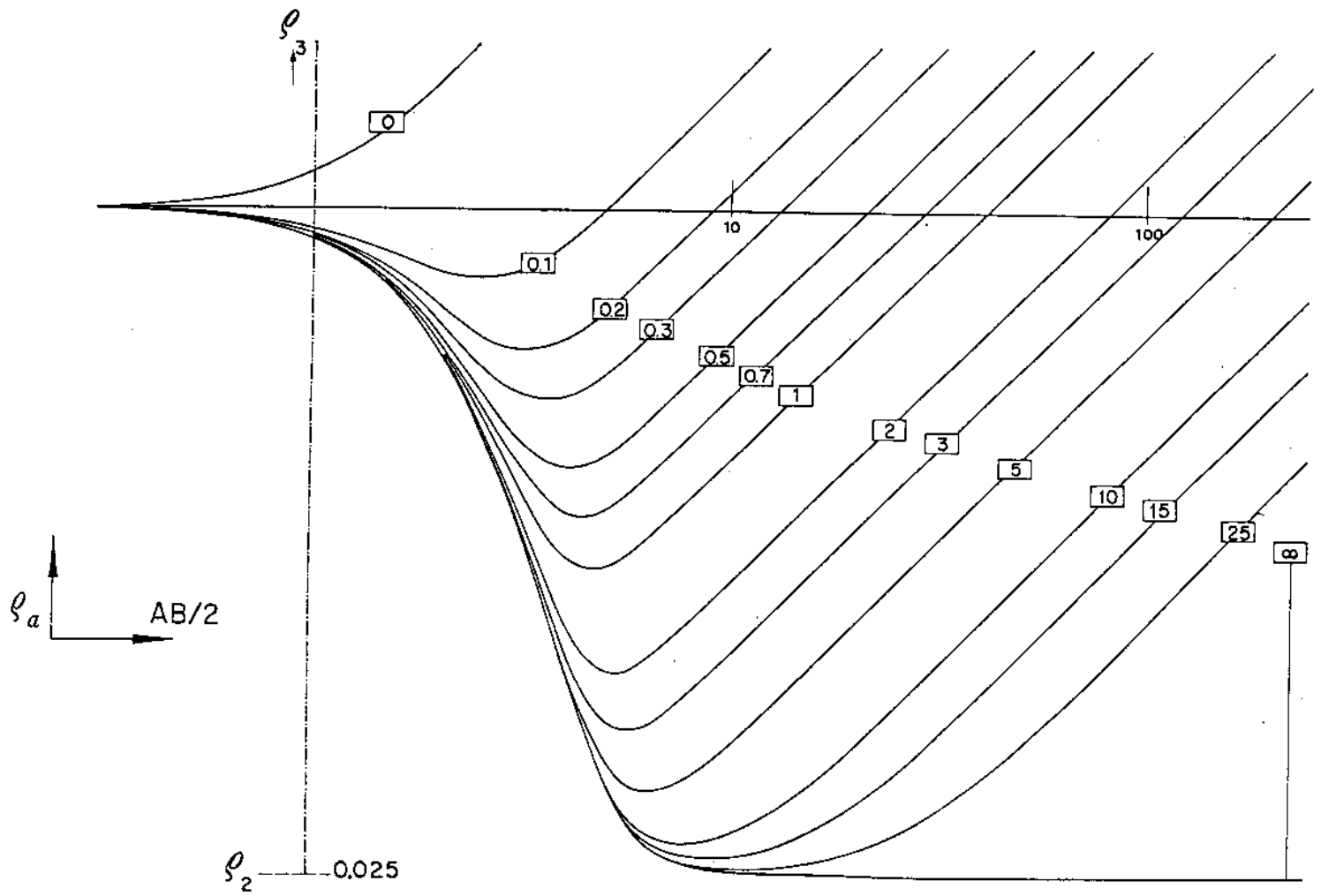


$E_1 = 1; \rho_1 = 1; E_2 = \square$

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H - 25

1 - 0.025 -  $\infty$

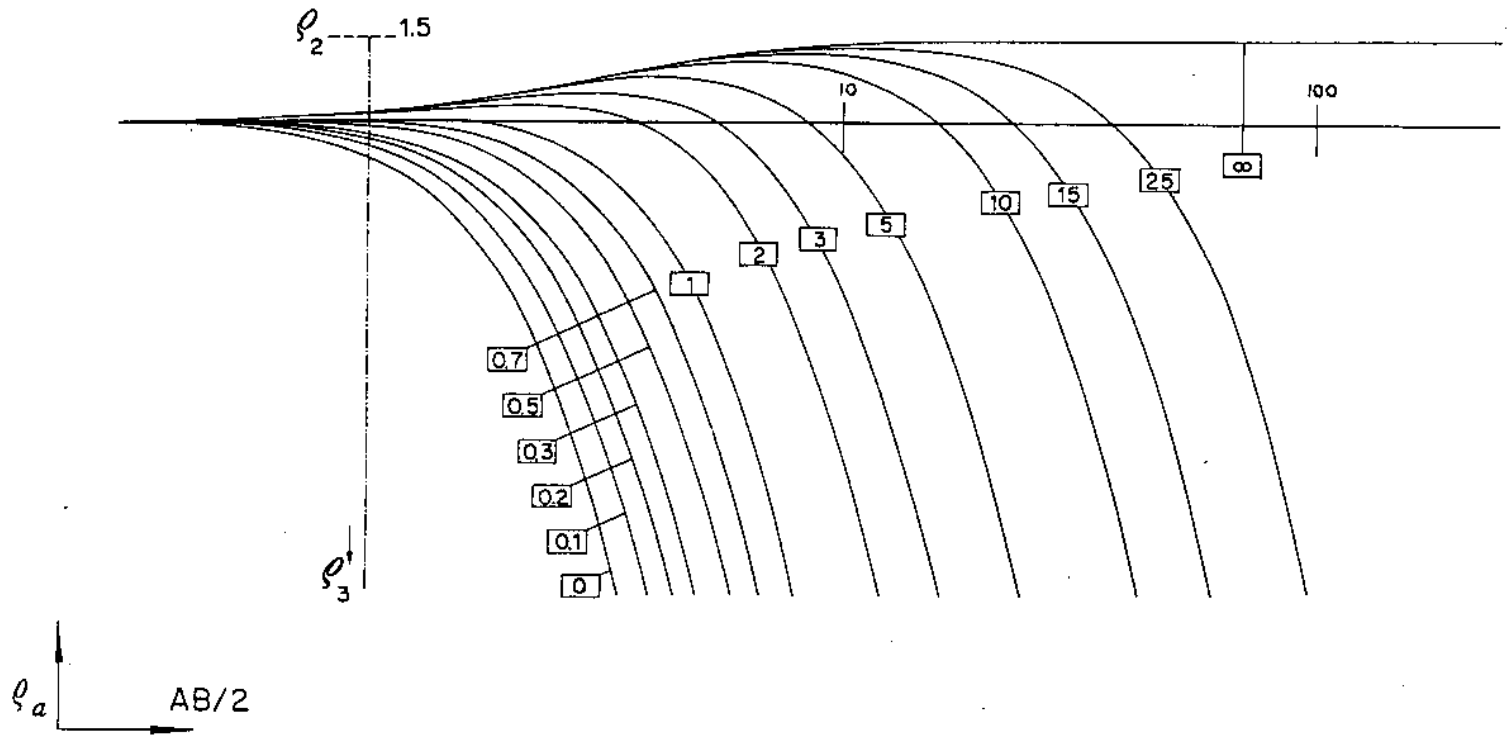


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$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

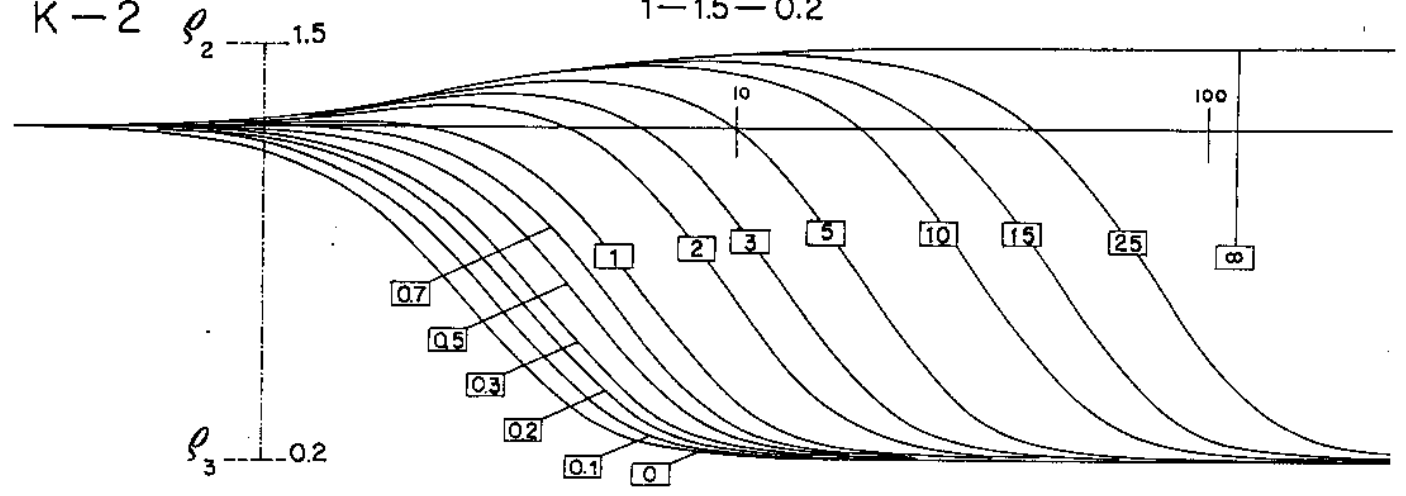
K-1

1-1.5-0



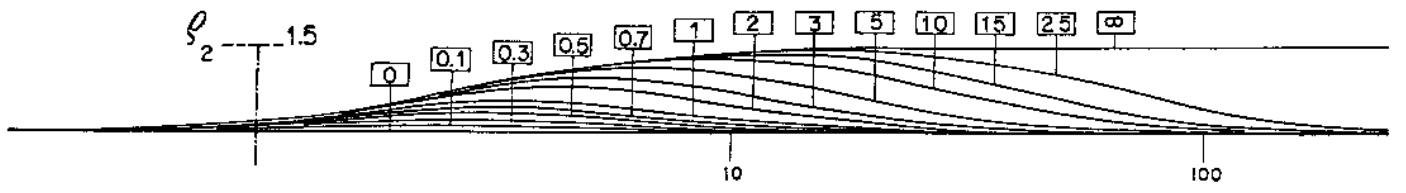
K-2

1-1.5-0.2



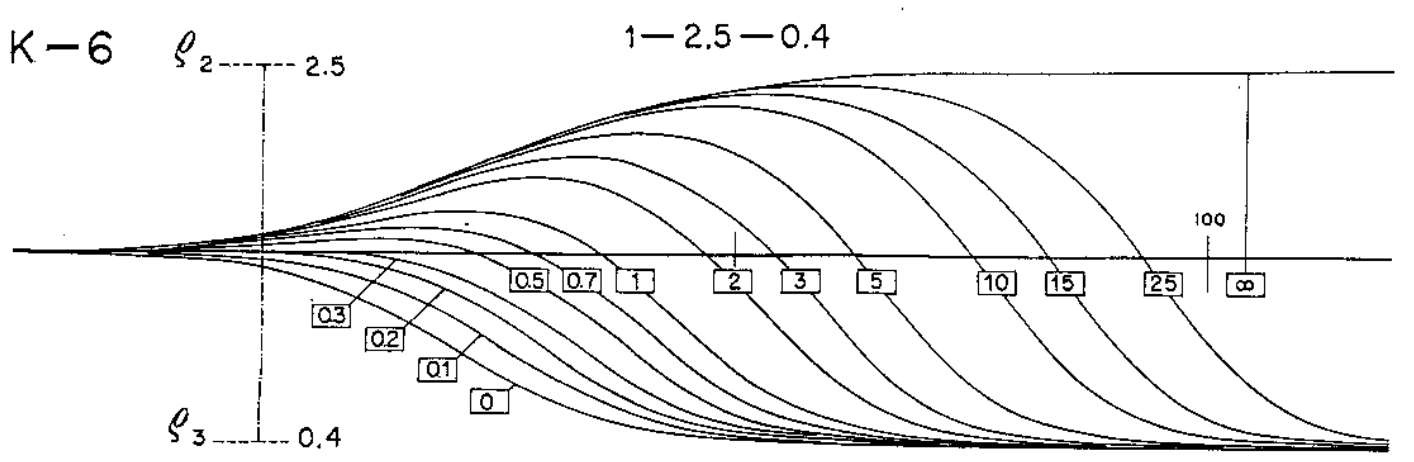
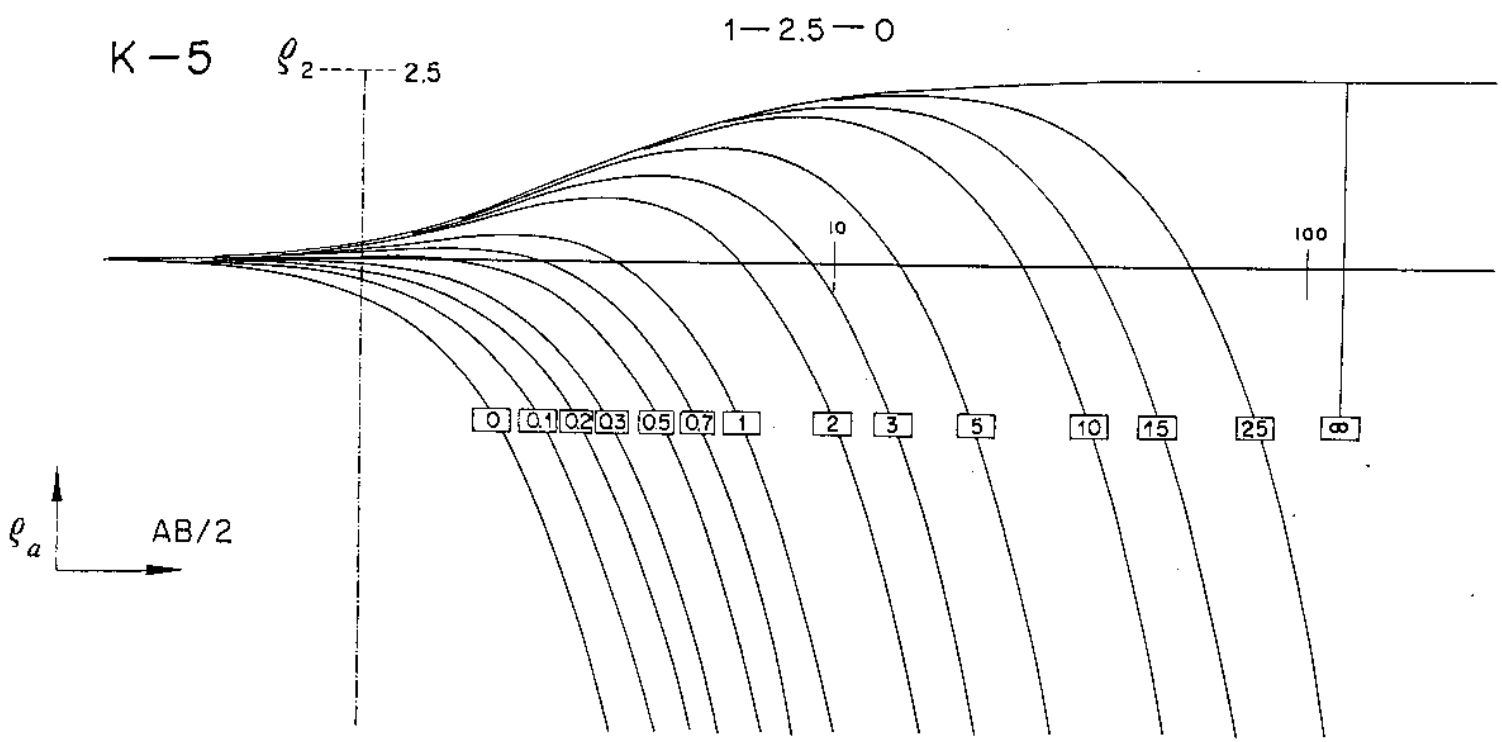
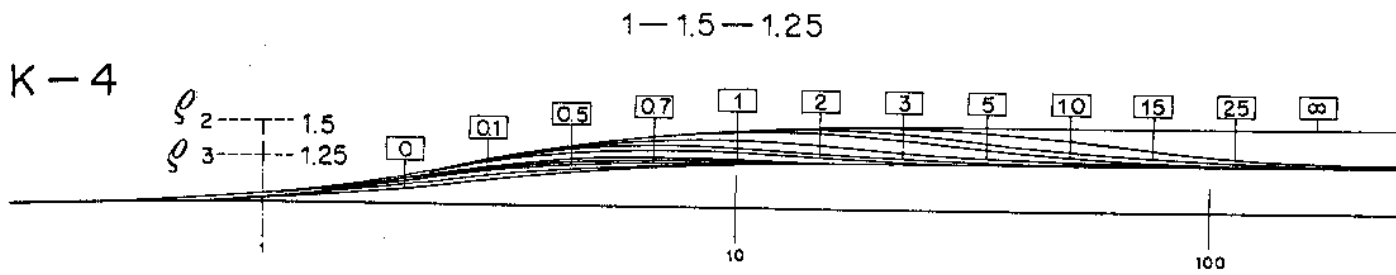
K-3

1-1.5-1



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$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

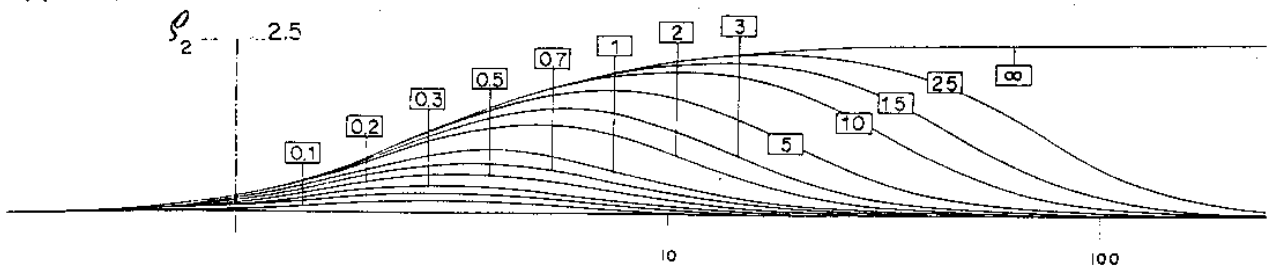


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$E_1 = 1; l_1 = 1; E_2 = \square$

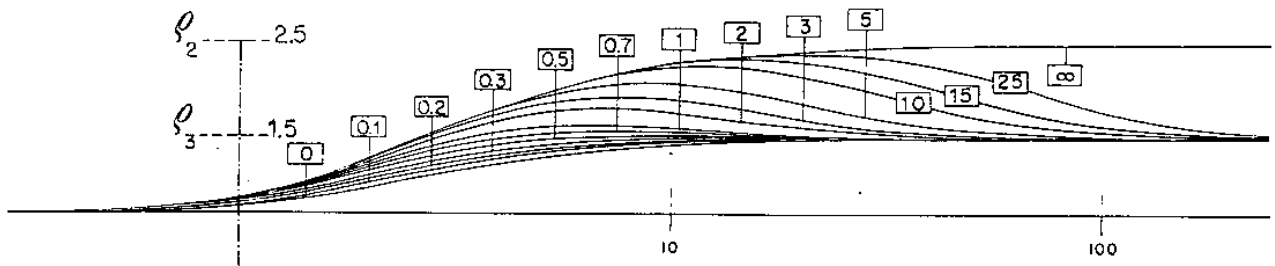
K-7

1-2.5-1



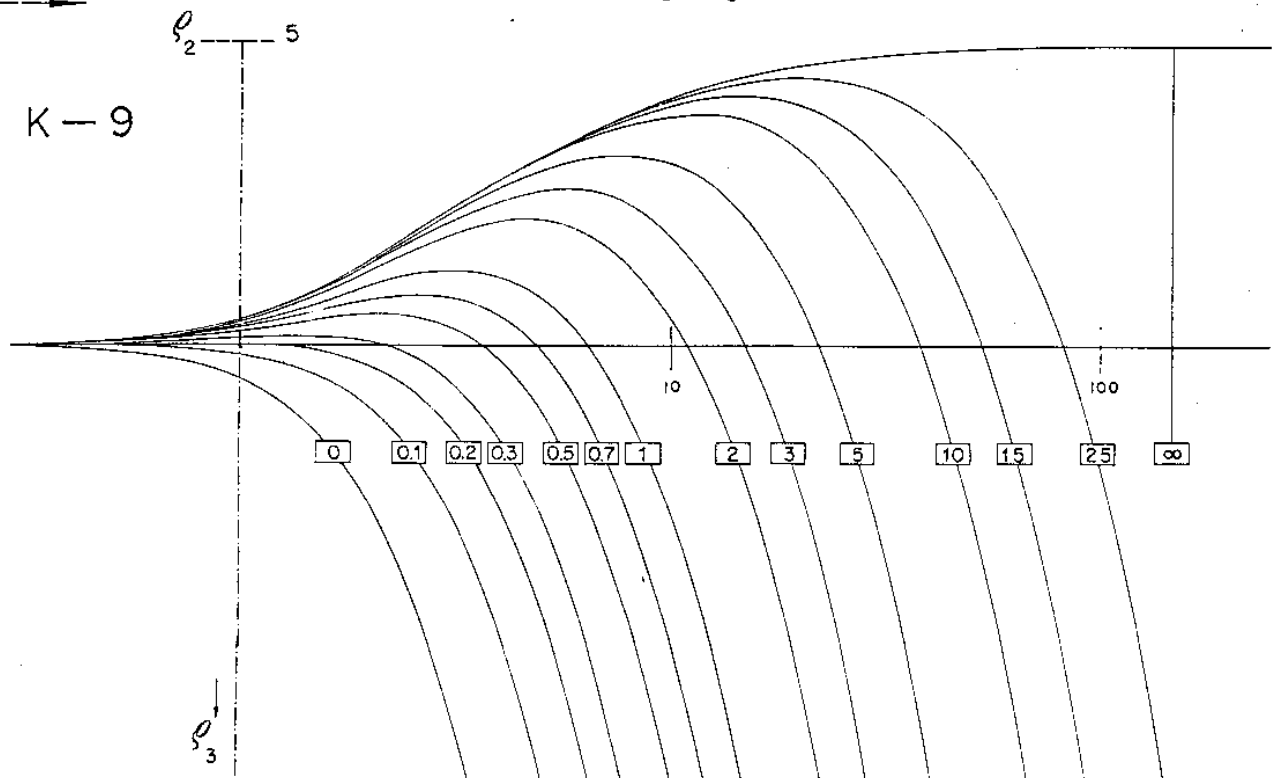
K-8

1-2.5-1.5



$\rho_a$  AB/2

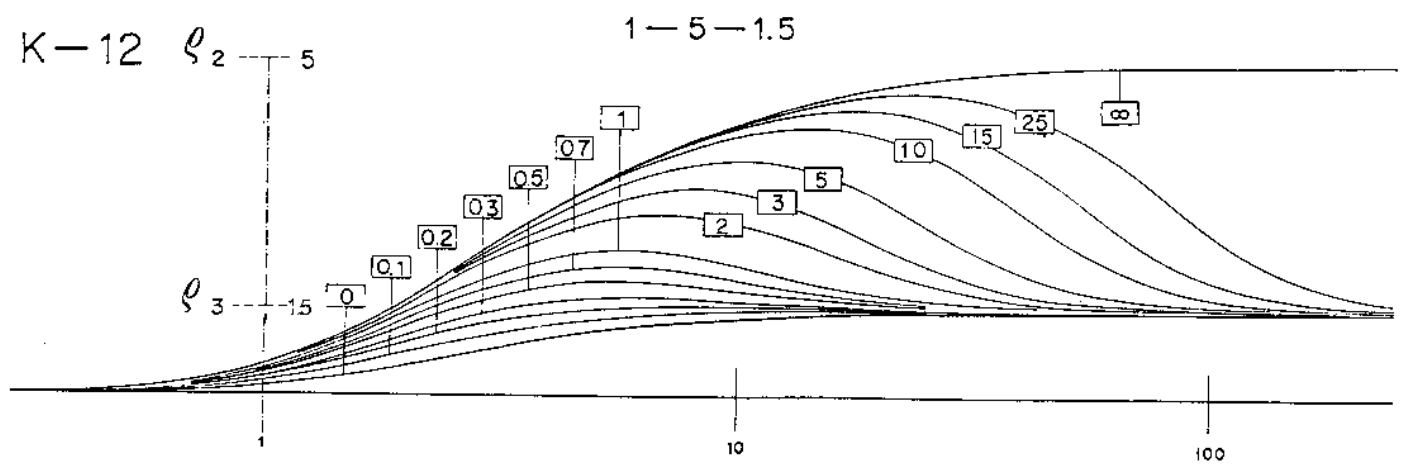
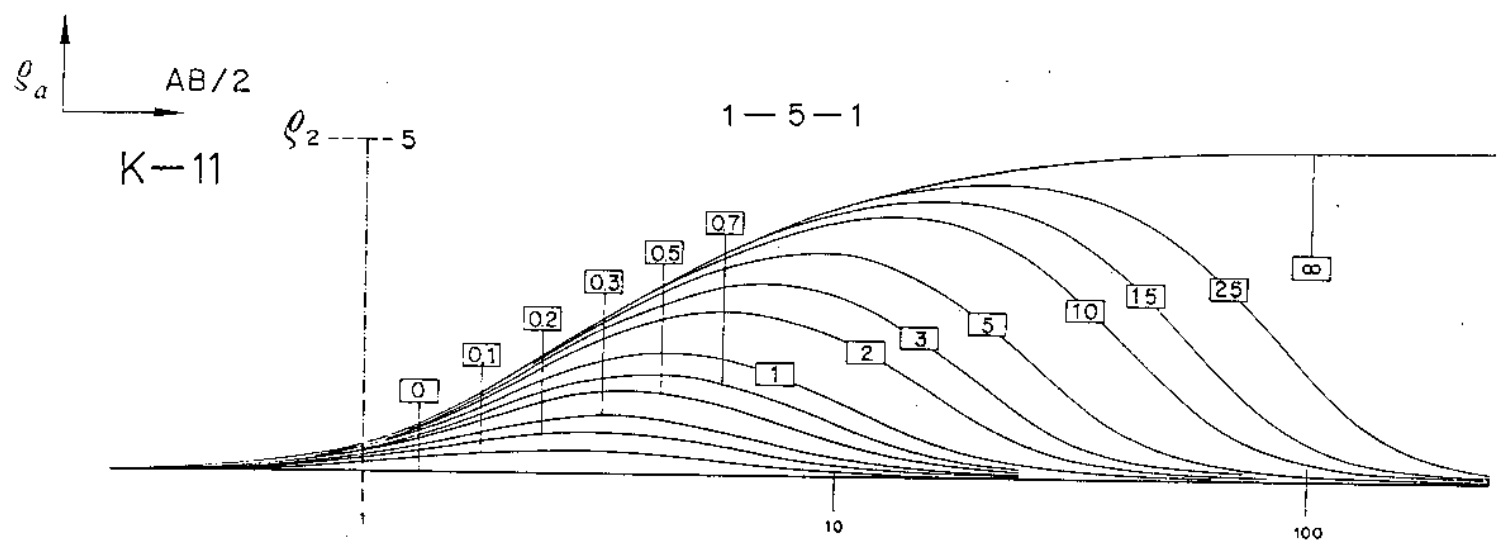
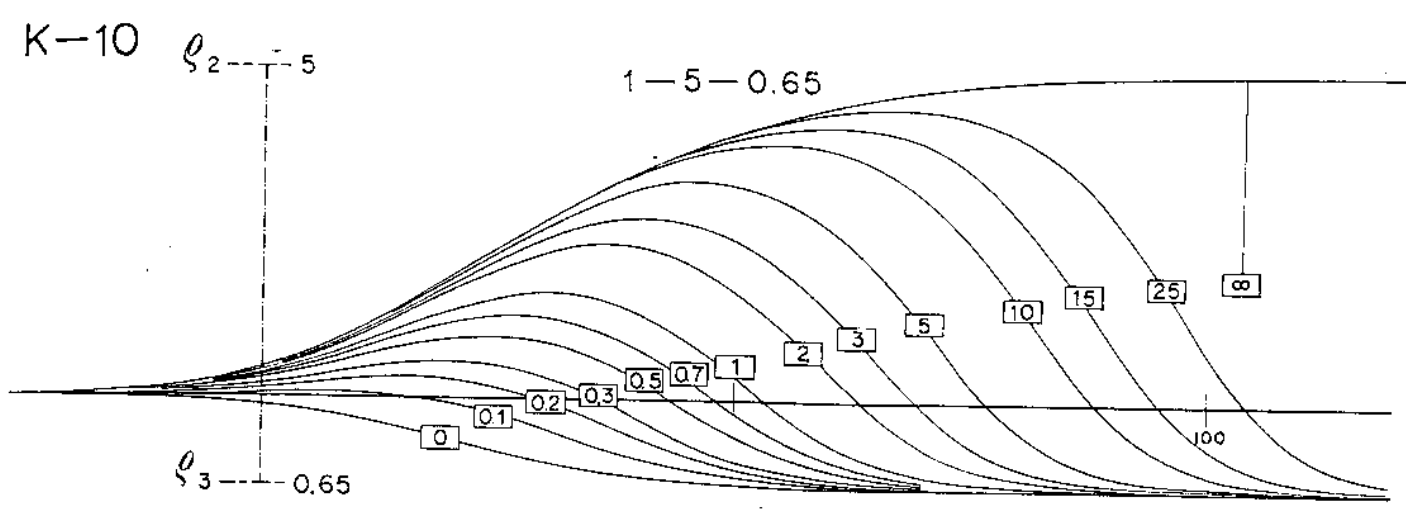
1-5-0



K-9

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$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

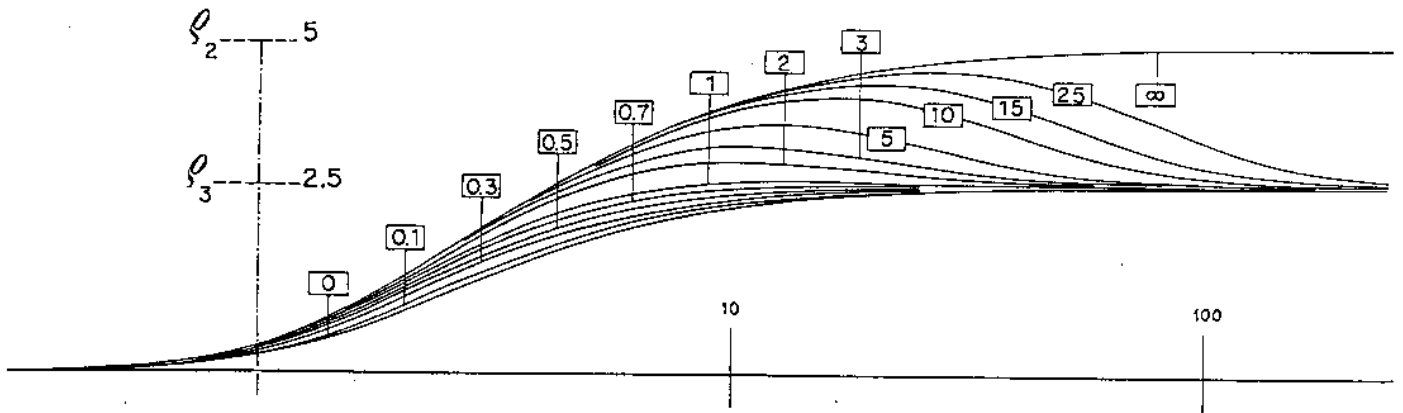


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 MASTER CURVES FOR VES  
 CURVAS PATRON PARA SEV.

$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

K-13

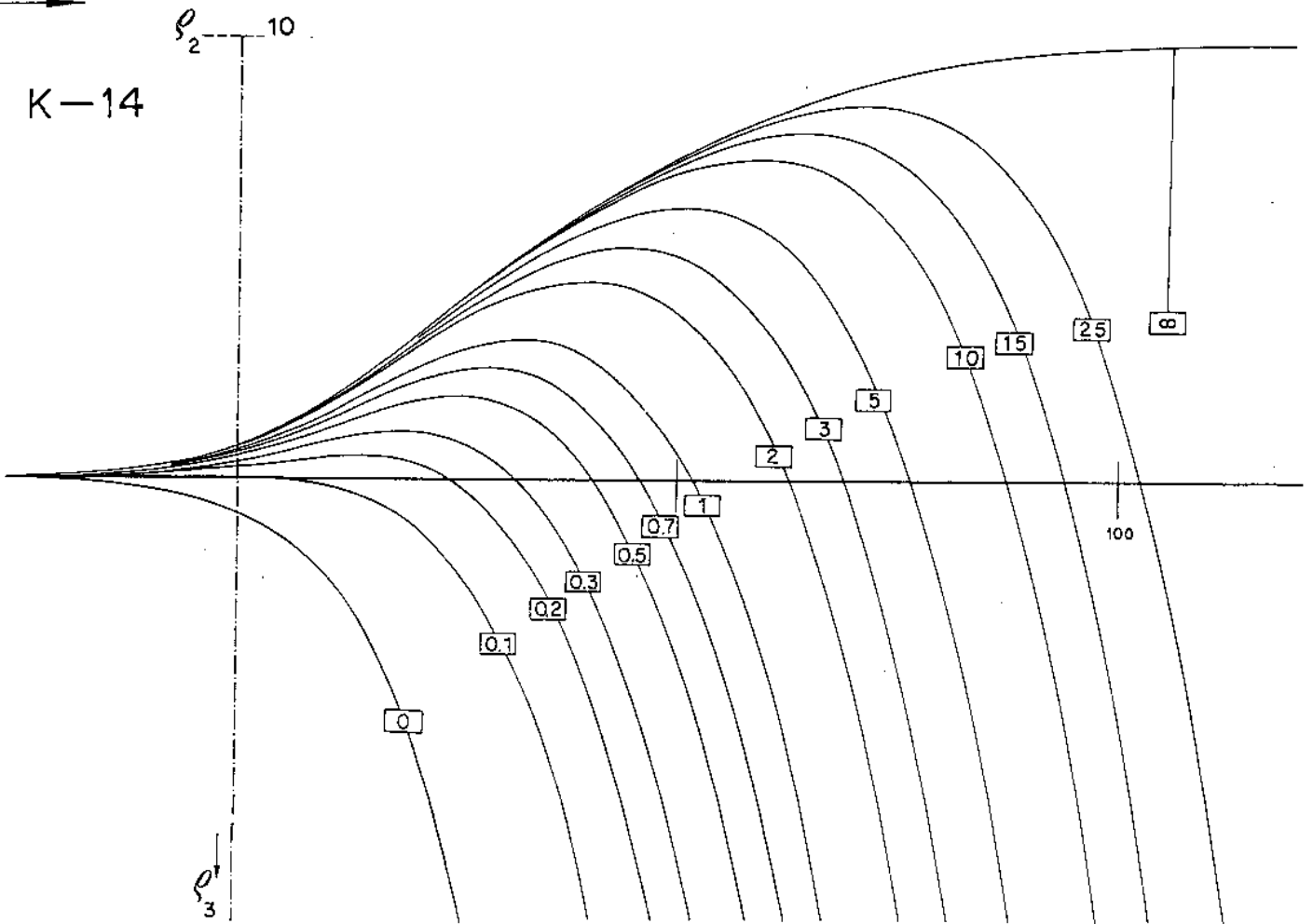
1-5-2.5



$\rho_a$   $\rightarrow$   $AB/2$

1-10-0

K-14

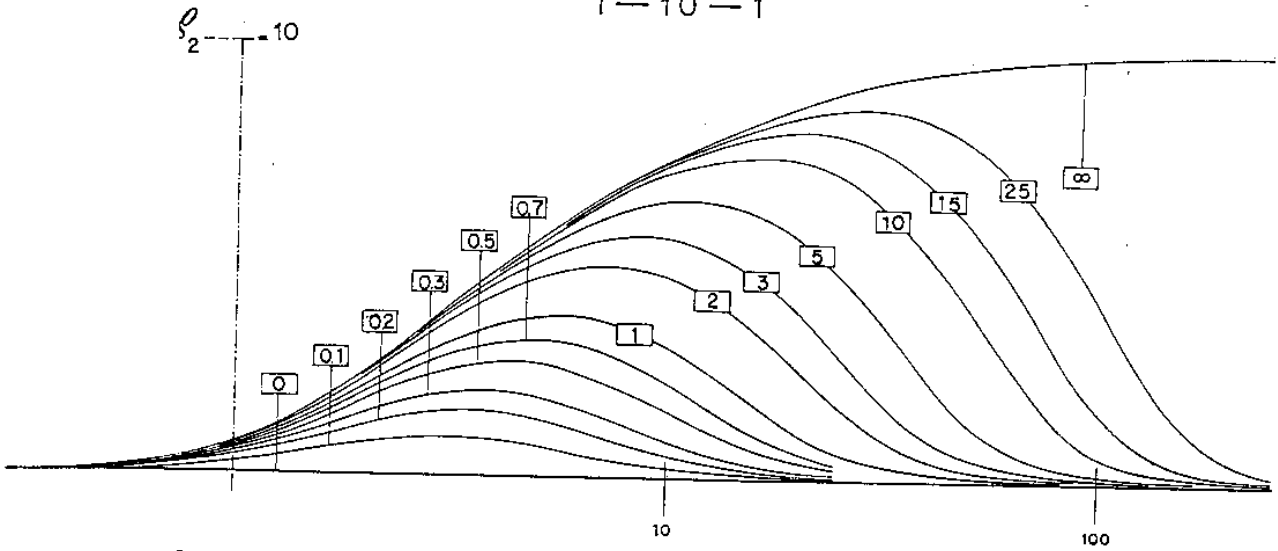


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 CURVAS PATRON PARA SEV

$E_1 = 1; \rho_1 = 1; E_2 = \square$

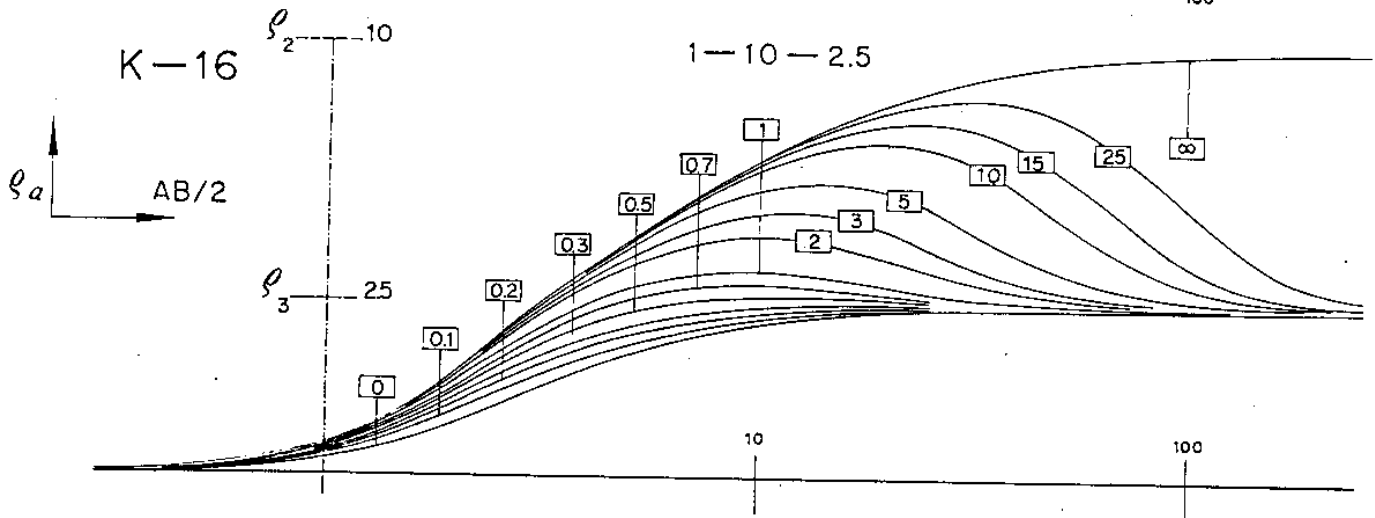
K-15

1-10-1



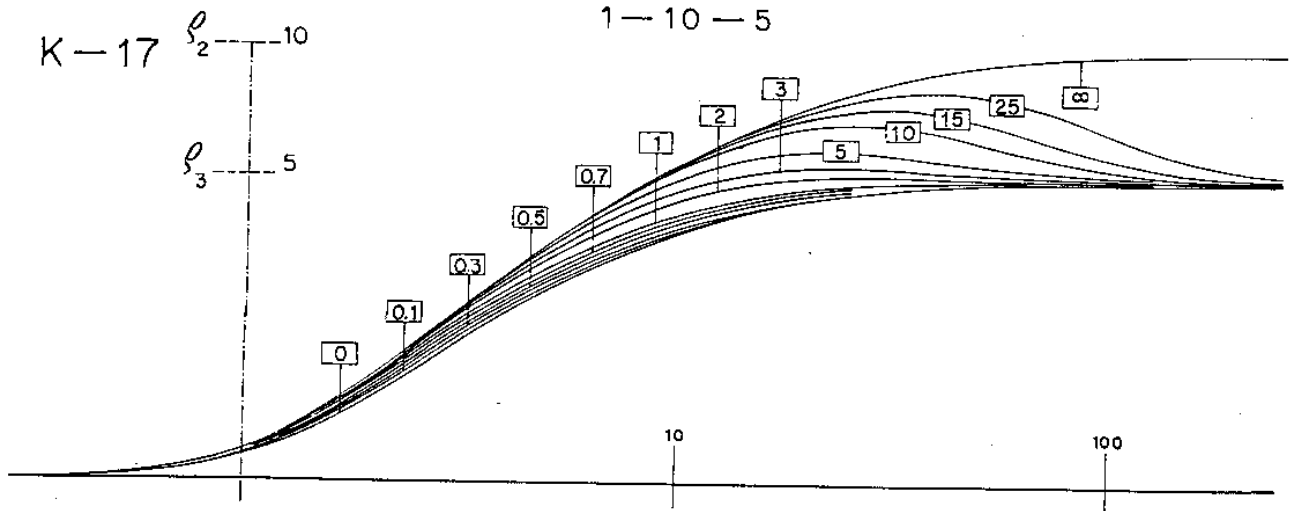
K-16

1-10-2.5



K-17

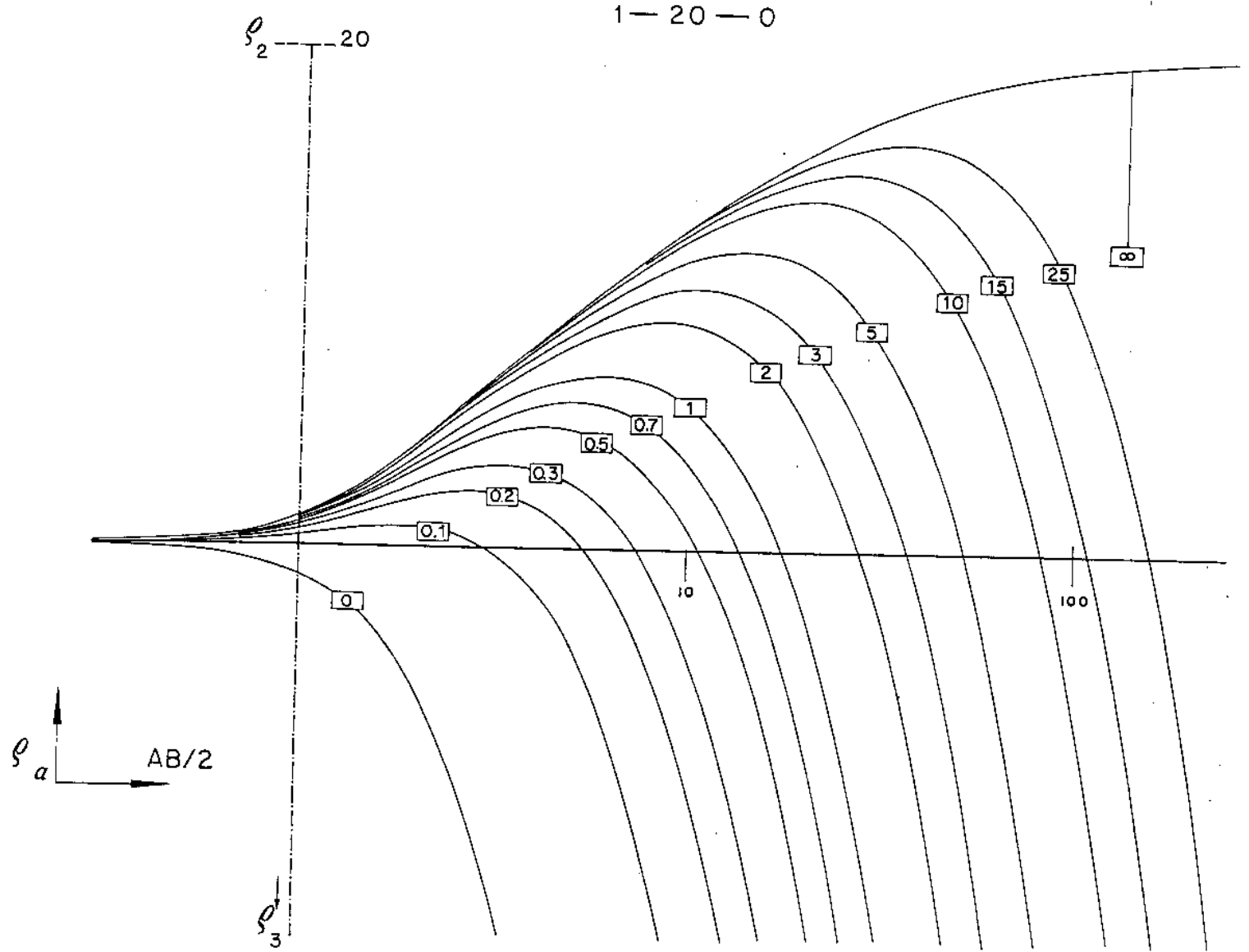
1-10-5



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$$E_1 = 1; \nu_1 = 1; E_2 = \square$$

K-18



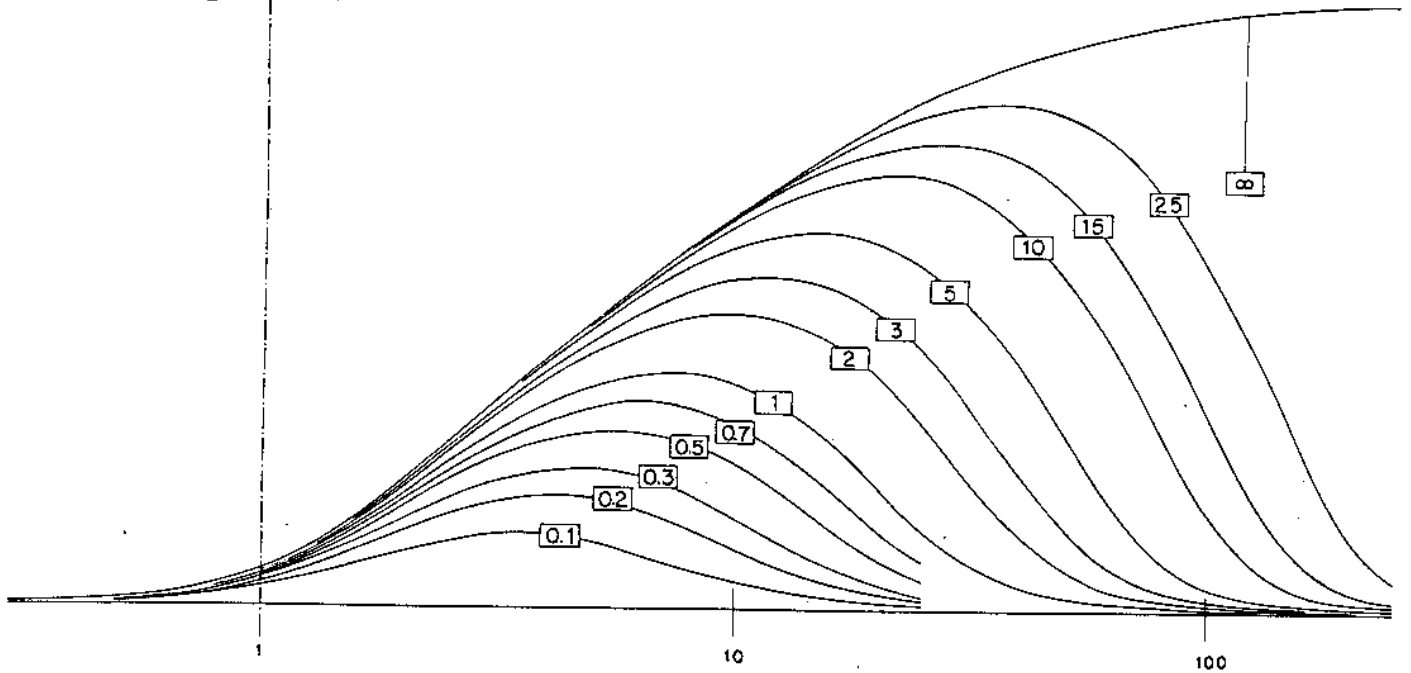
$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

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K-19

1-20-1

$\rho_2$  - 20



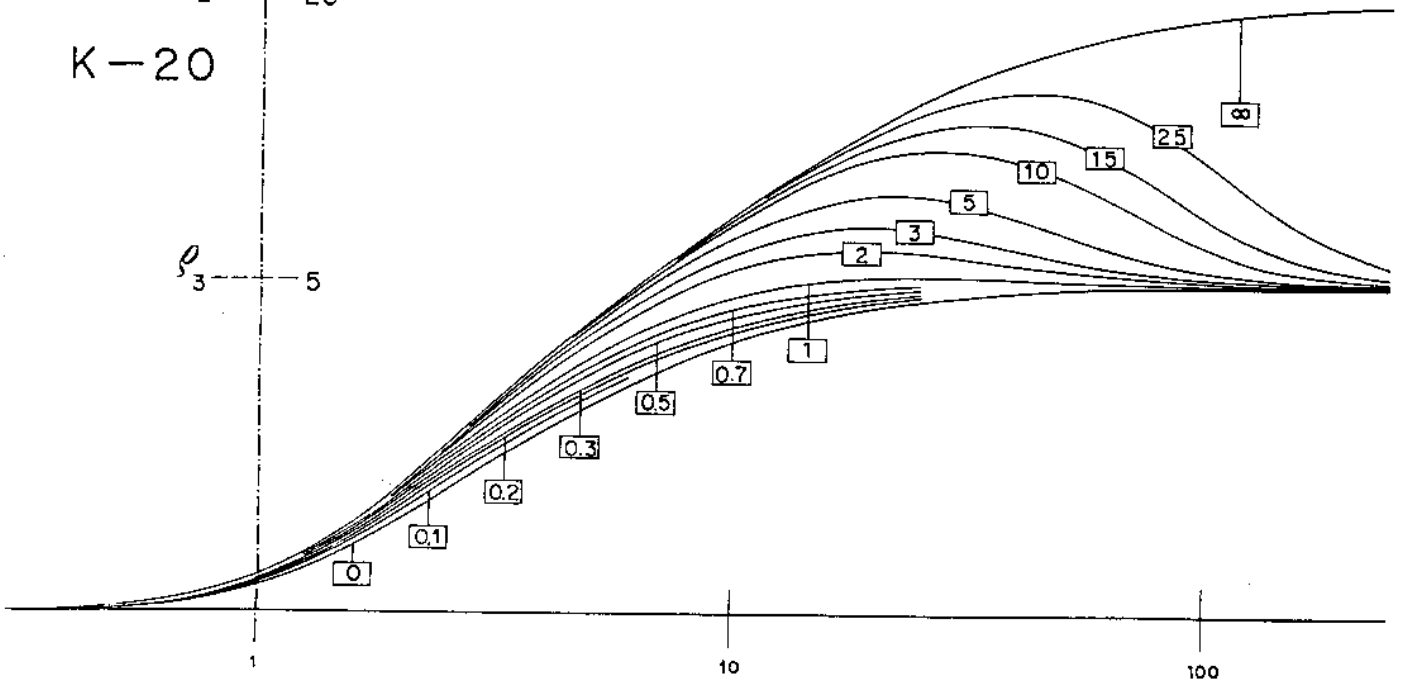
$\rho_a$   
AB/2

1-20-5

K-20

$\rho_2$  - 20

$\rho_3$  - 5

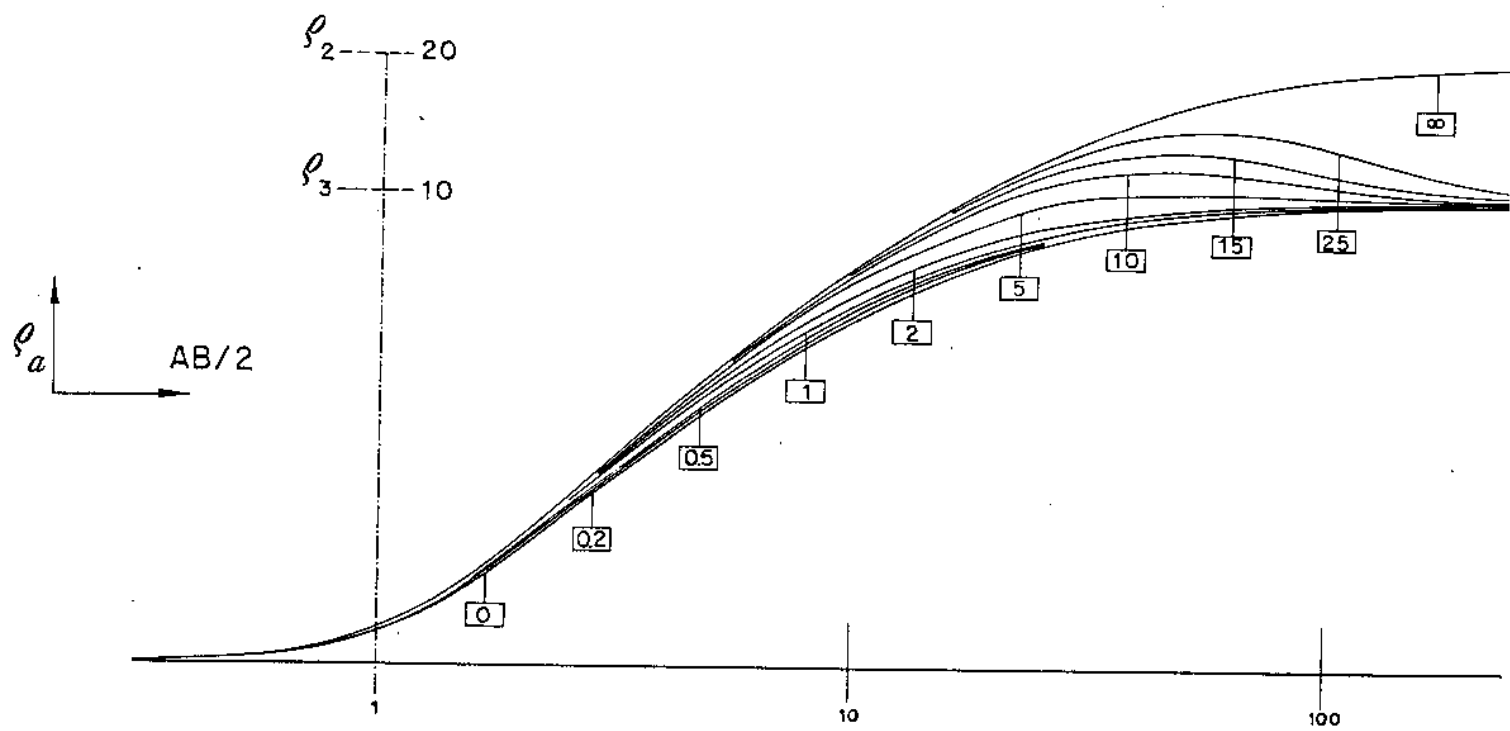


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$E_1 = 1; \rho_1 = 1; E_2 = \square$

K-21

1-20-10

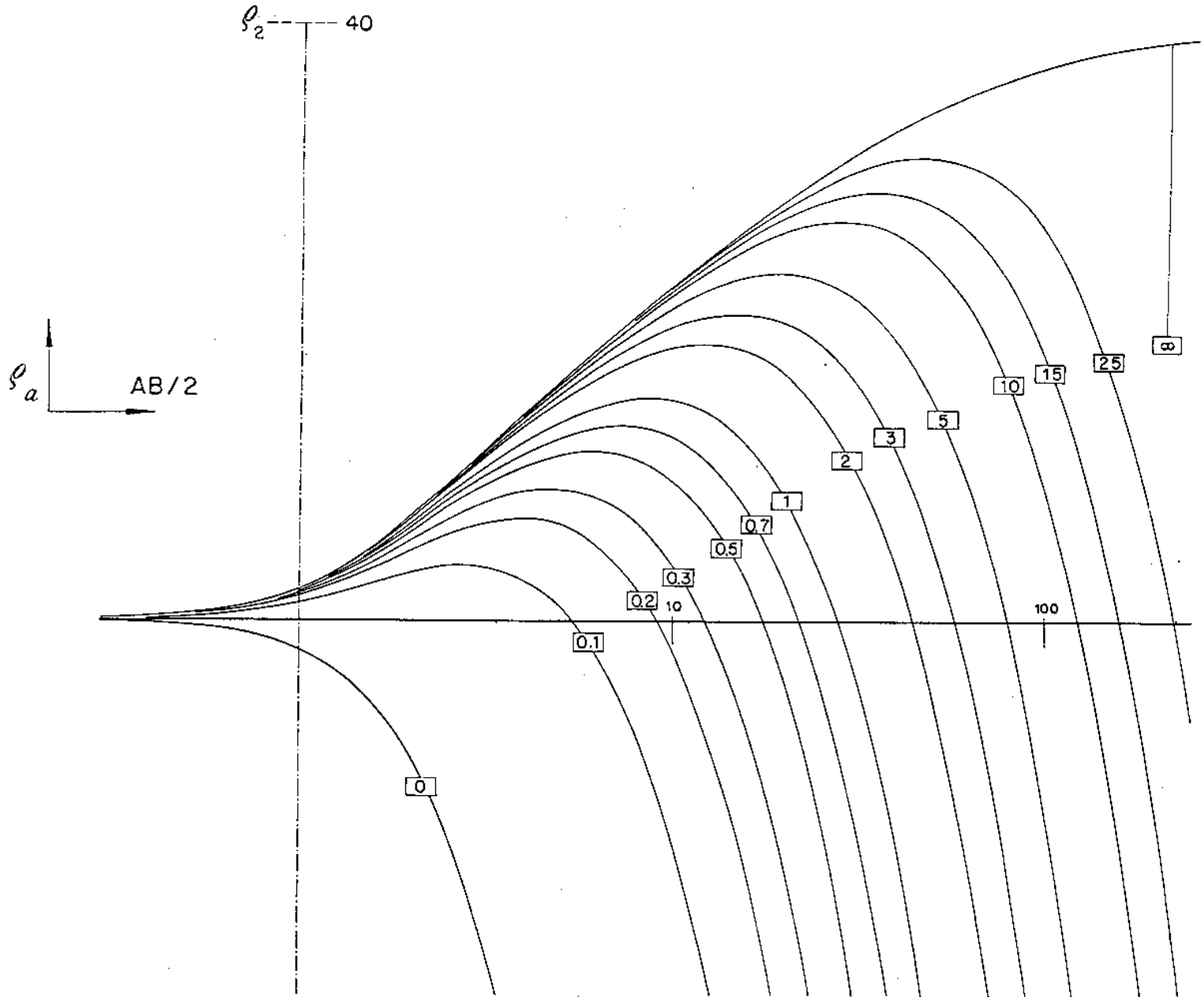


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CURVAS PATRON PARA SE.V.

$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

K-22

1-40-0

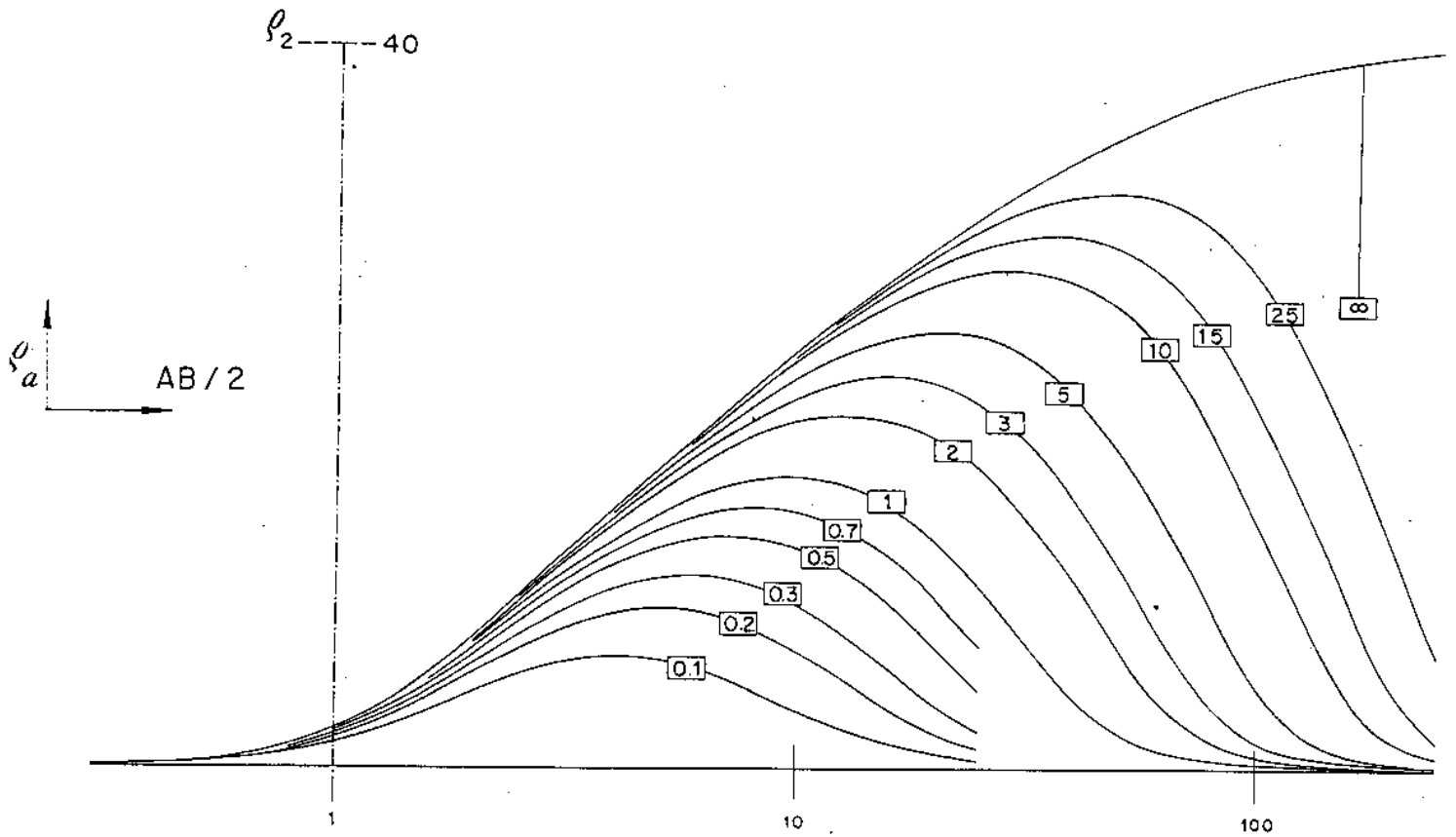


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CURVAS PATRON PARA SEV.

$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

K-23

1-40-1

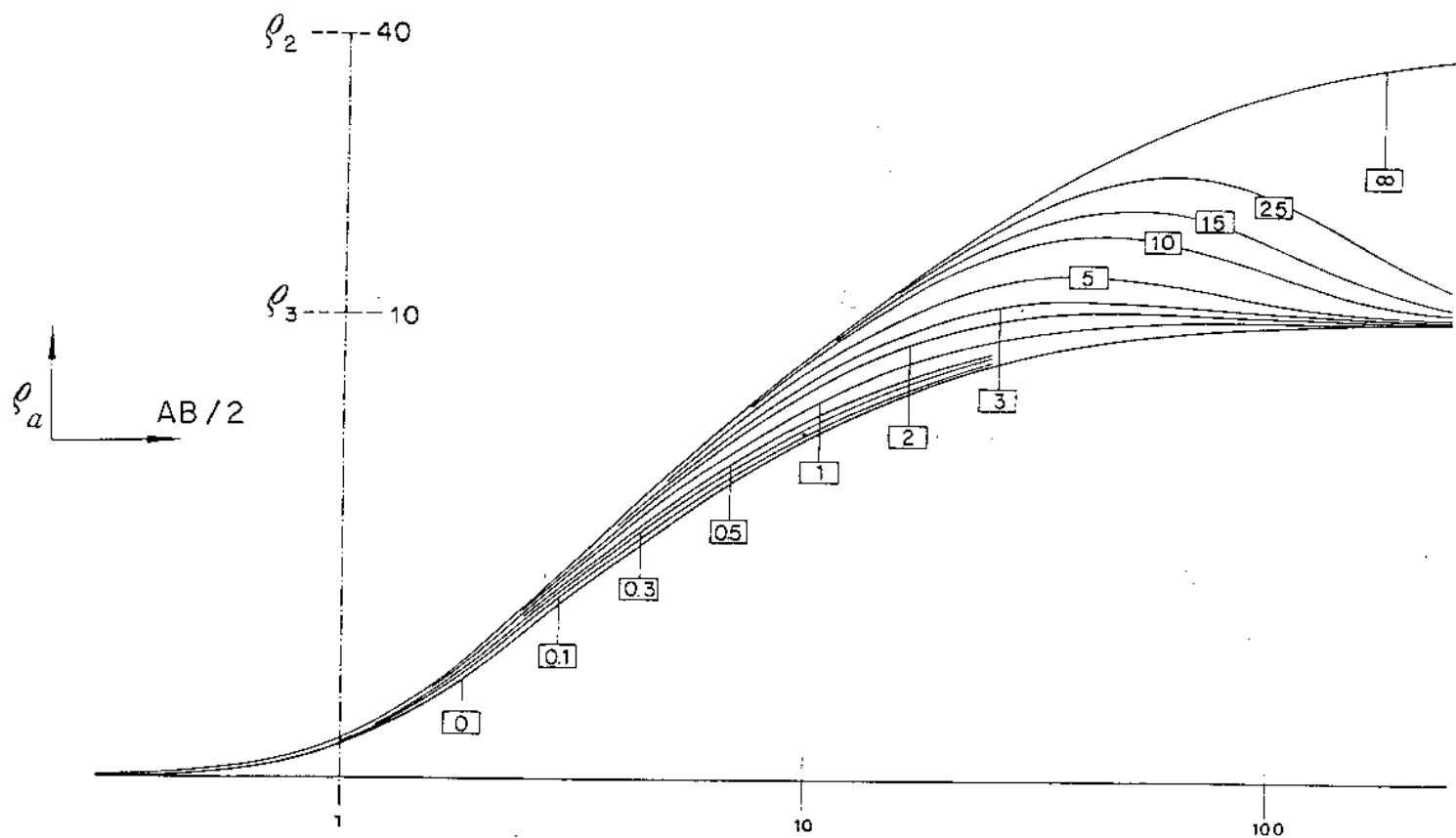


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CURVAS PATRON PARA SEV.

$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

K-2.4

1-40-10

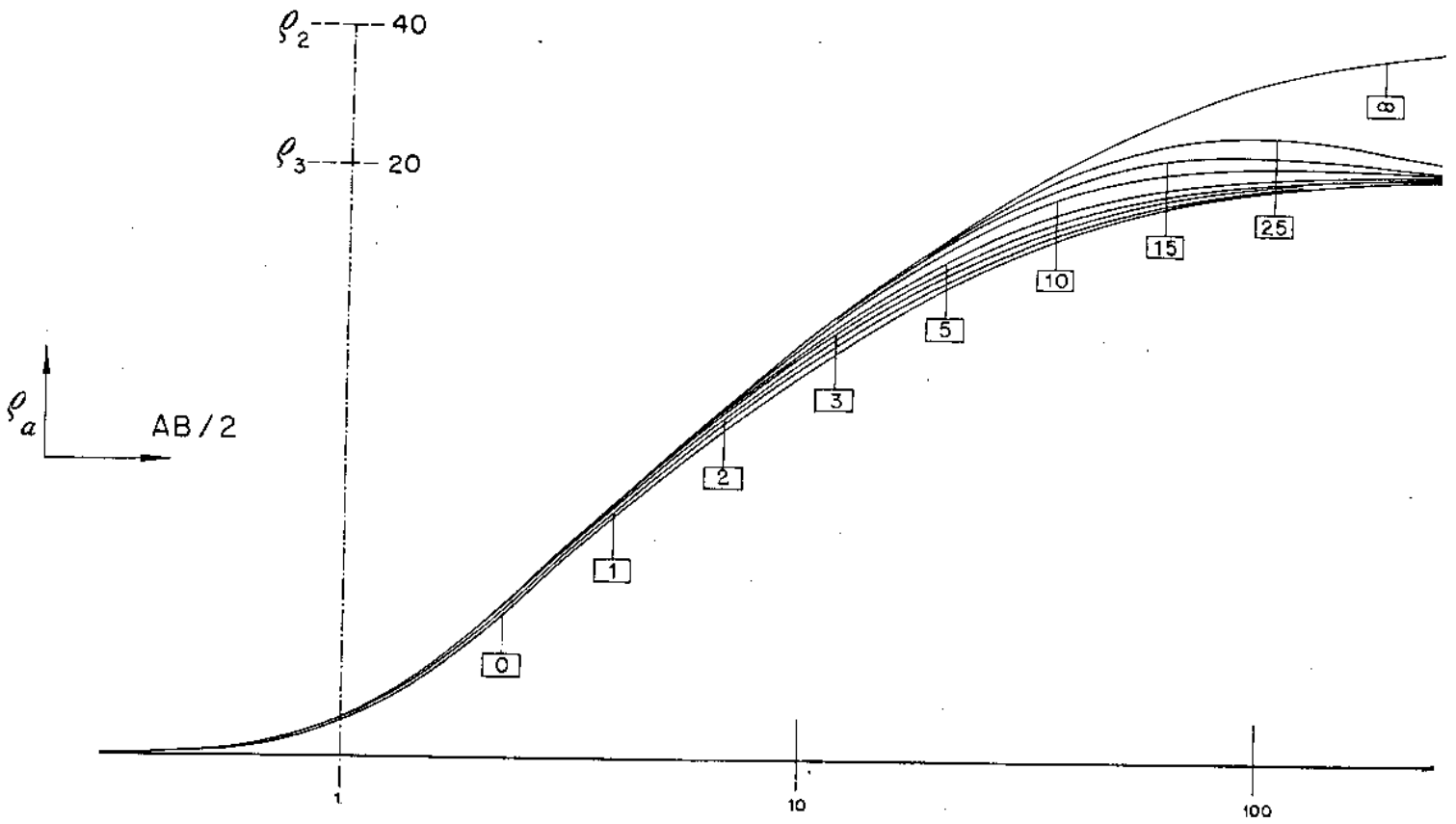


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CURVAS PATRON PARA SEV.

$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

K-25

1-40-20

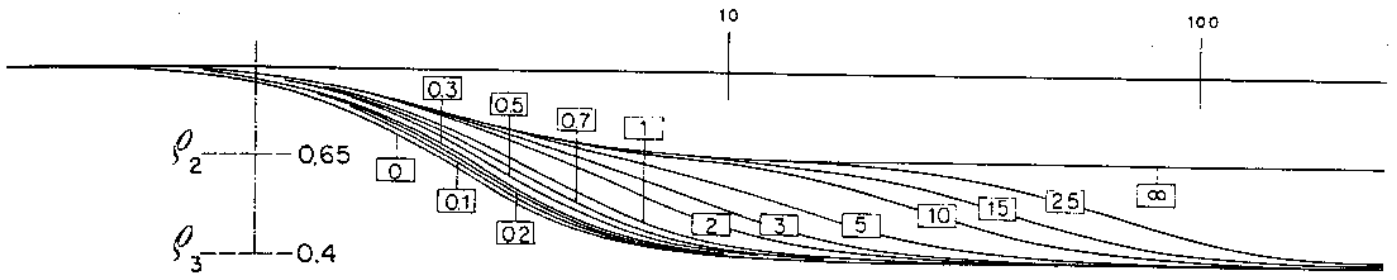


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CURVAS PATRON PARA SEV.

$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

Q-1

1-0.65-0.4



Q-2

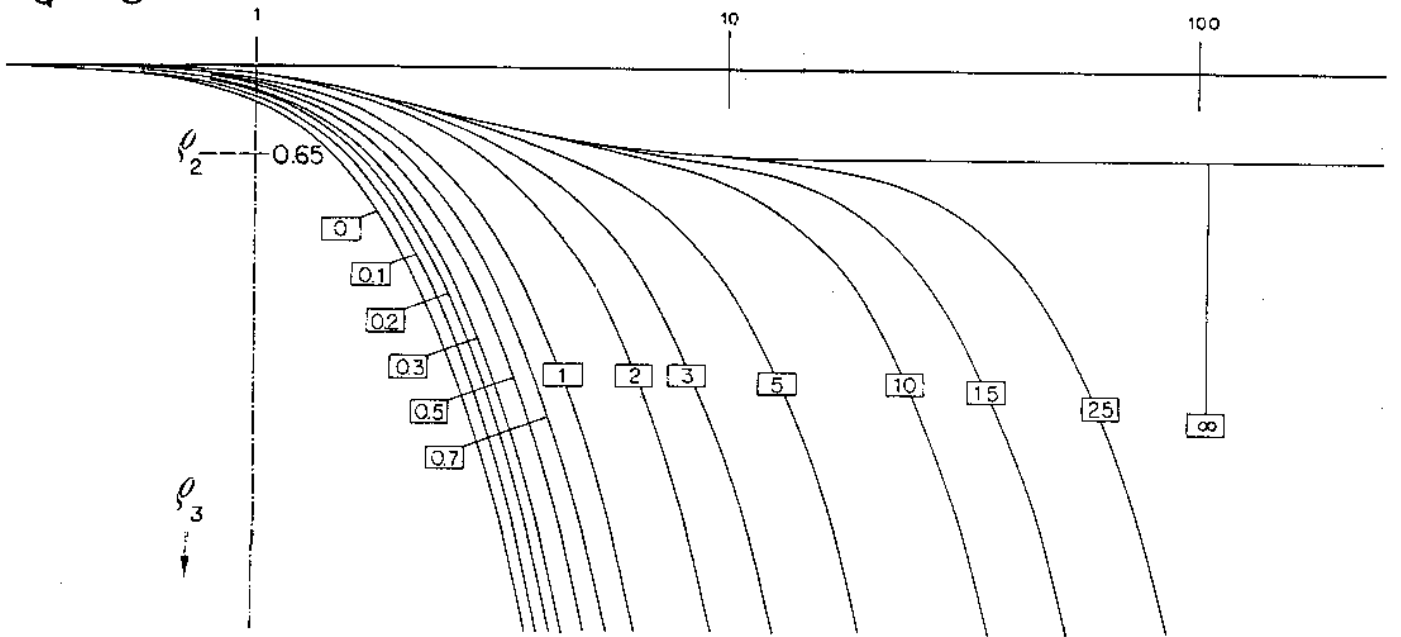
1-0.65-0.2



$\rho_a$   $\longleftarrow$   $\frac{AB}{2}$

Q-3

1-0.65-0

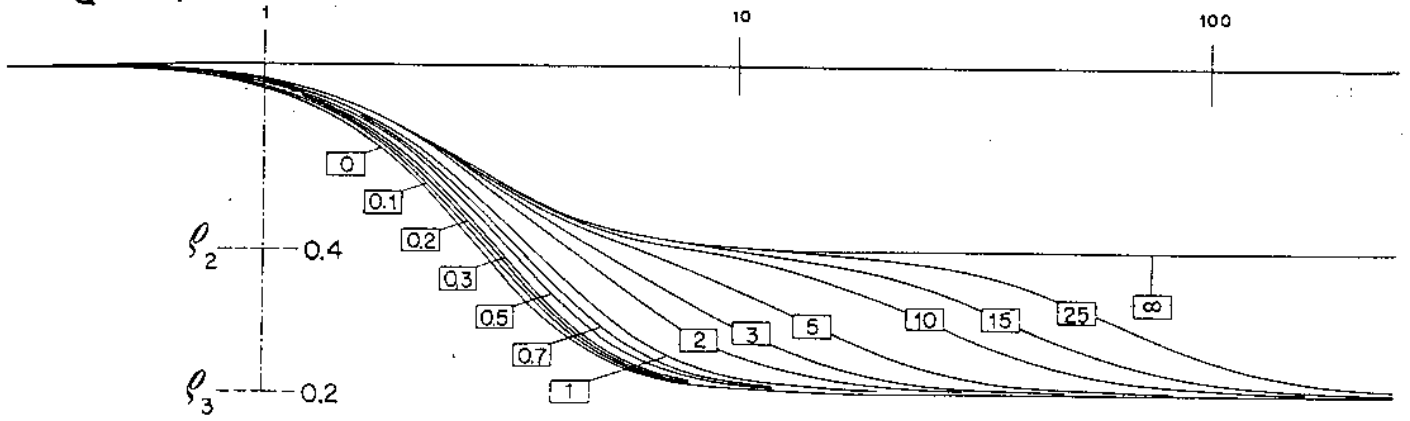


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 MASTER CURVES FOR V.E.S.  
 CURVAS PATRON PARA SEV.

$E_1 = 1; \rho_1 = 1; E_2 = \square$

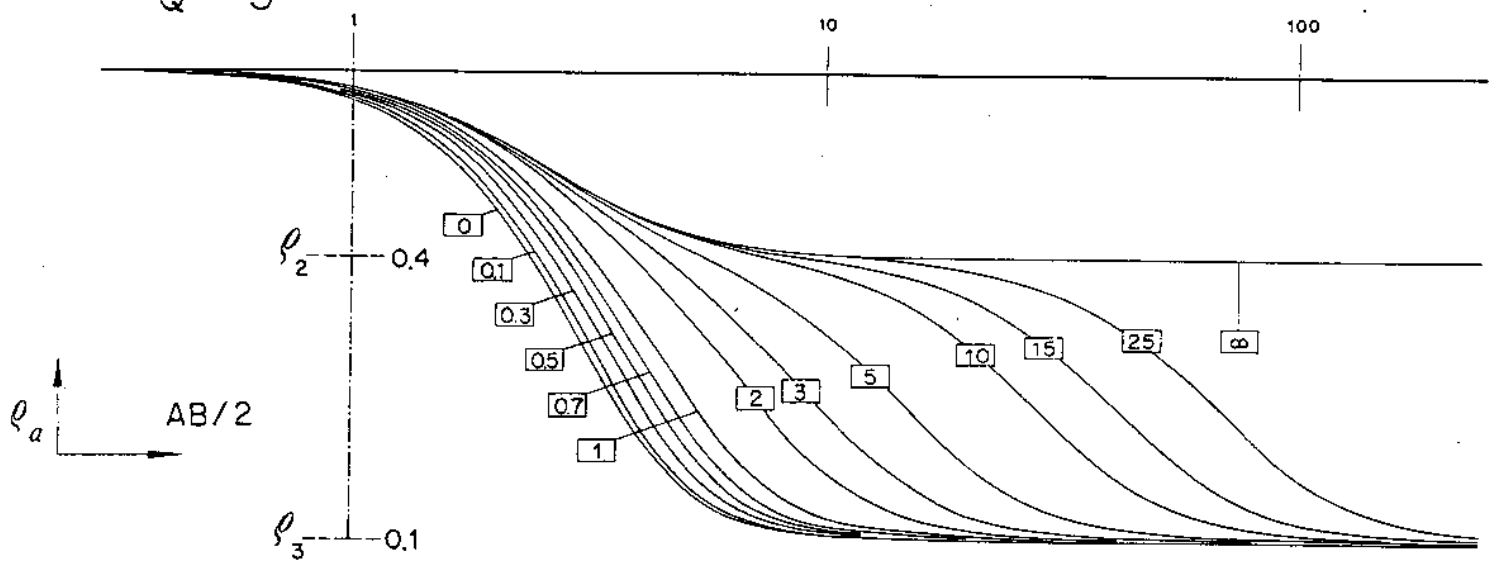
Q-4

1-0.4-0.2



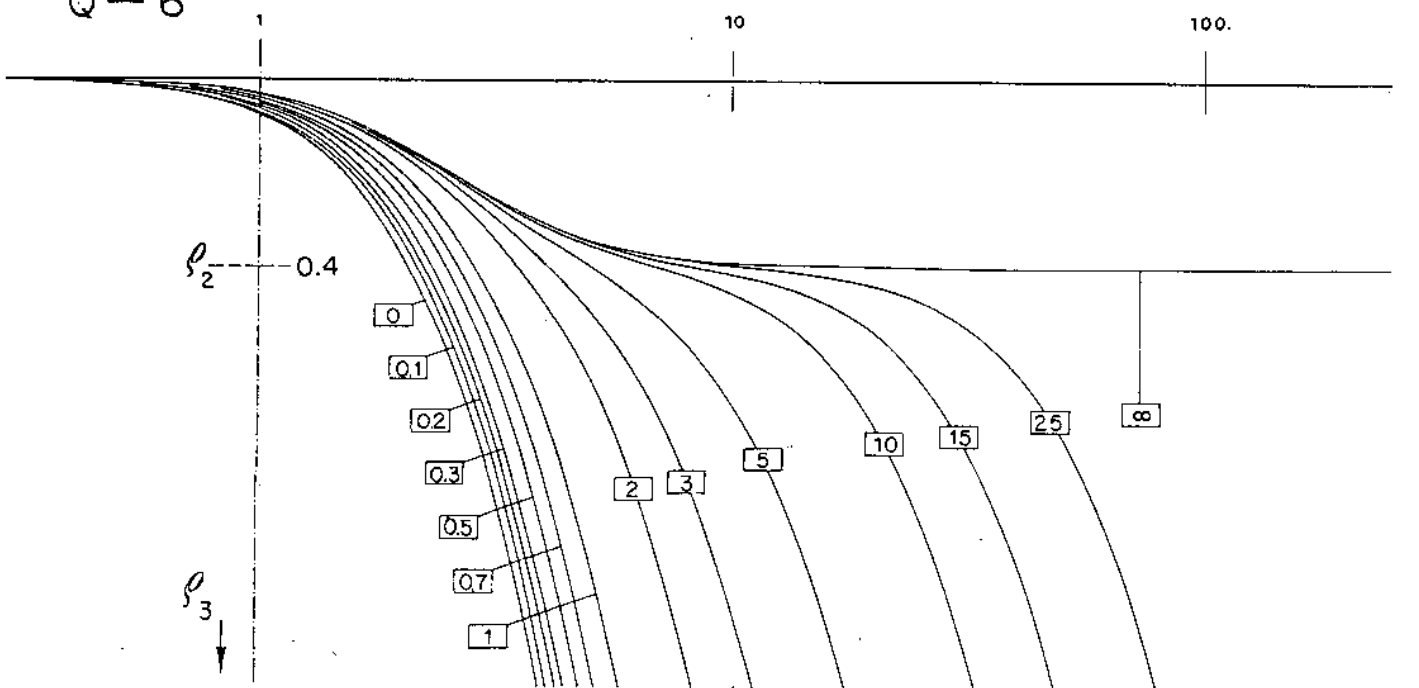
Q-5

1-0.4-0.1



Q-6

1-0.4-0

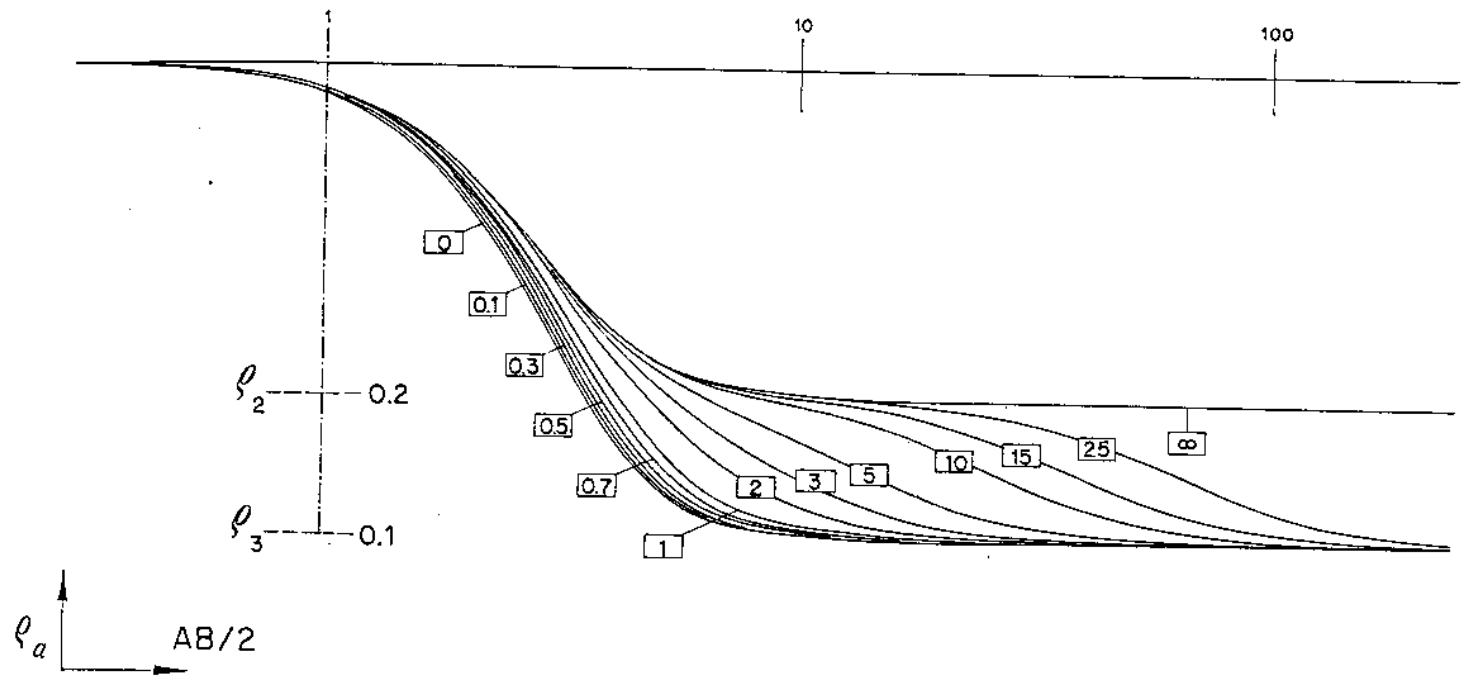


ORELLANA-MOONEY  
MASTER CURVES FOR V.E.S.  
CURVAS PATRON PARA SEV.

$E_1 = 1; \rho_1 = 1; E_2 = \square$

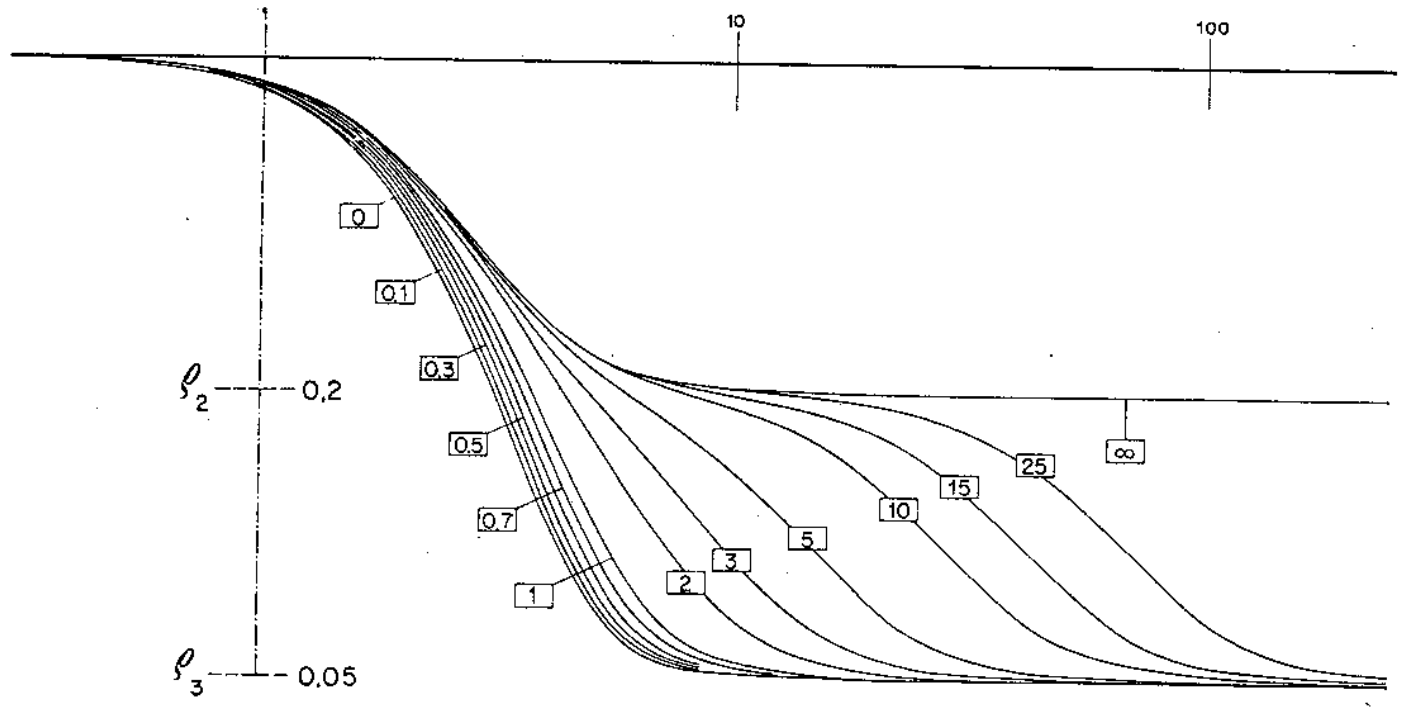
Q-7

1-0.2-0.1



Q-8

1-0.2-0.05

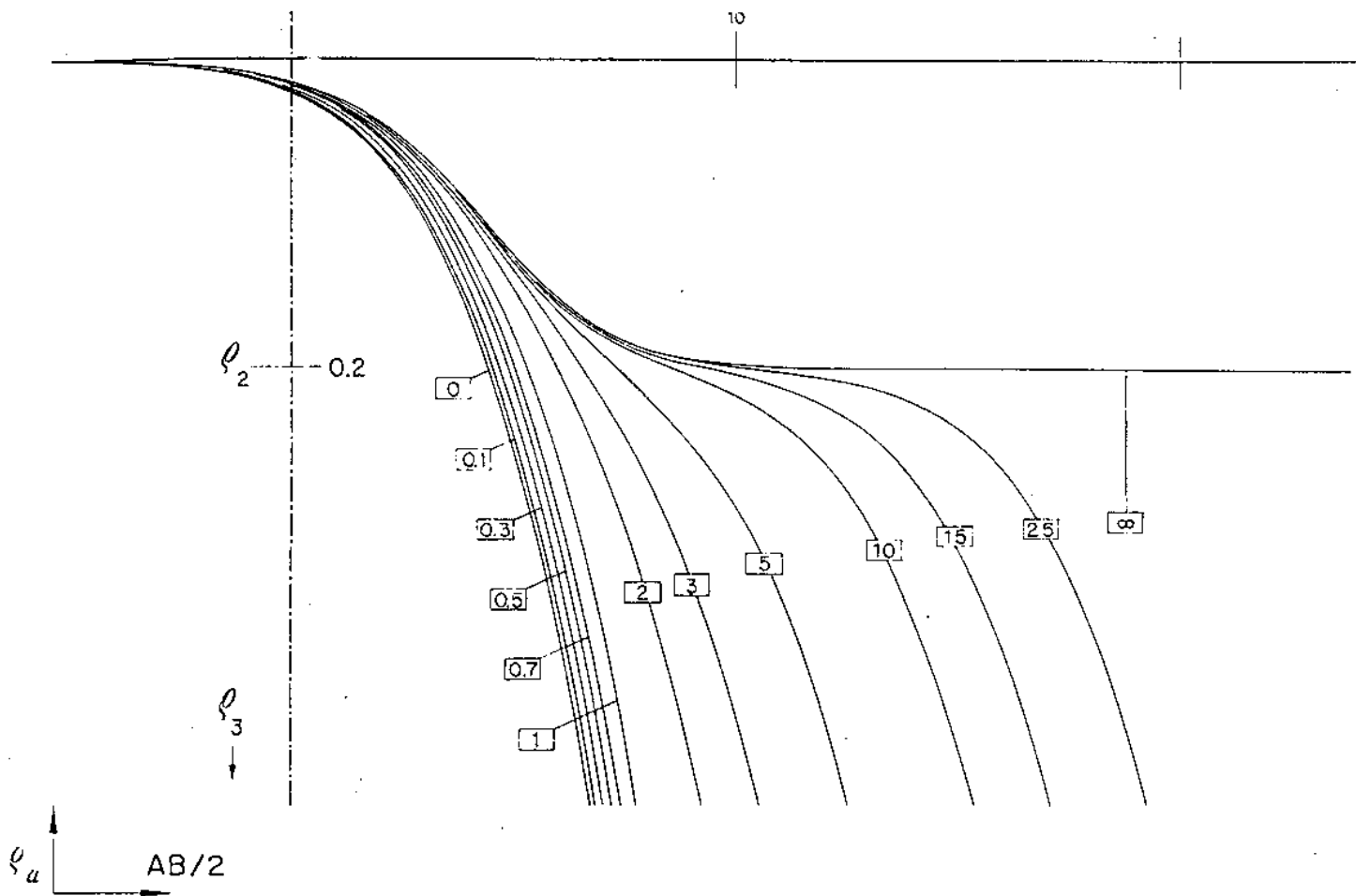


$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

ORELLANA — MOONEY  
 MASTER CURVES FOR VES.  
 CURVAS PATRON PARA S.E.V.

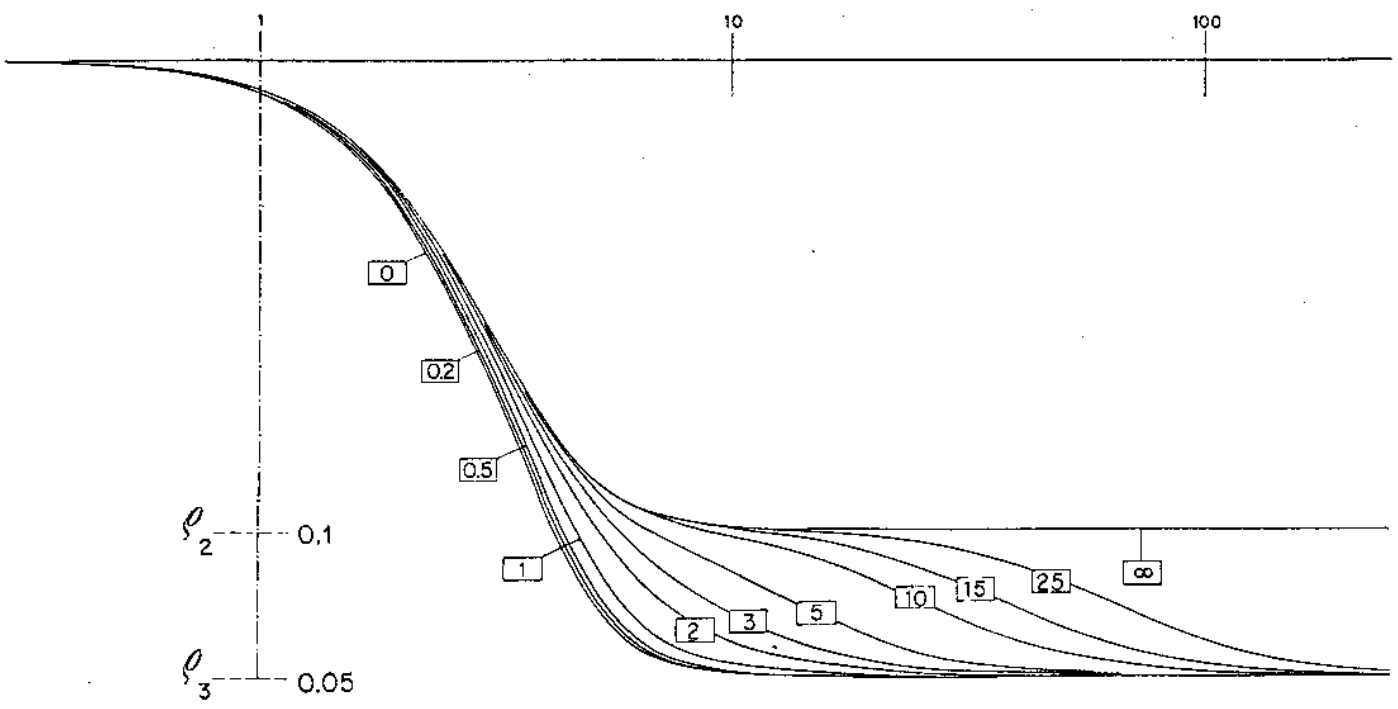
Q-9

1-0.2-0



Q-10

1-0.1-0.05

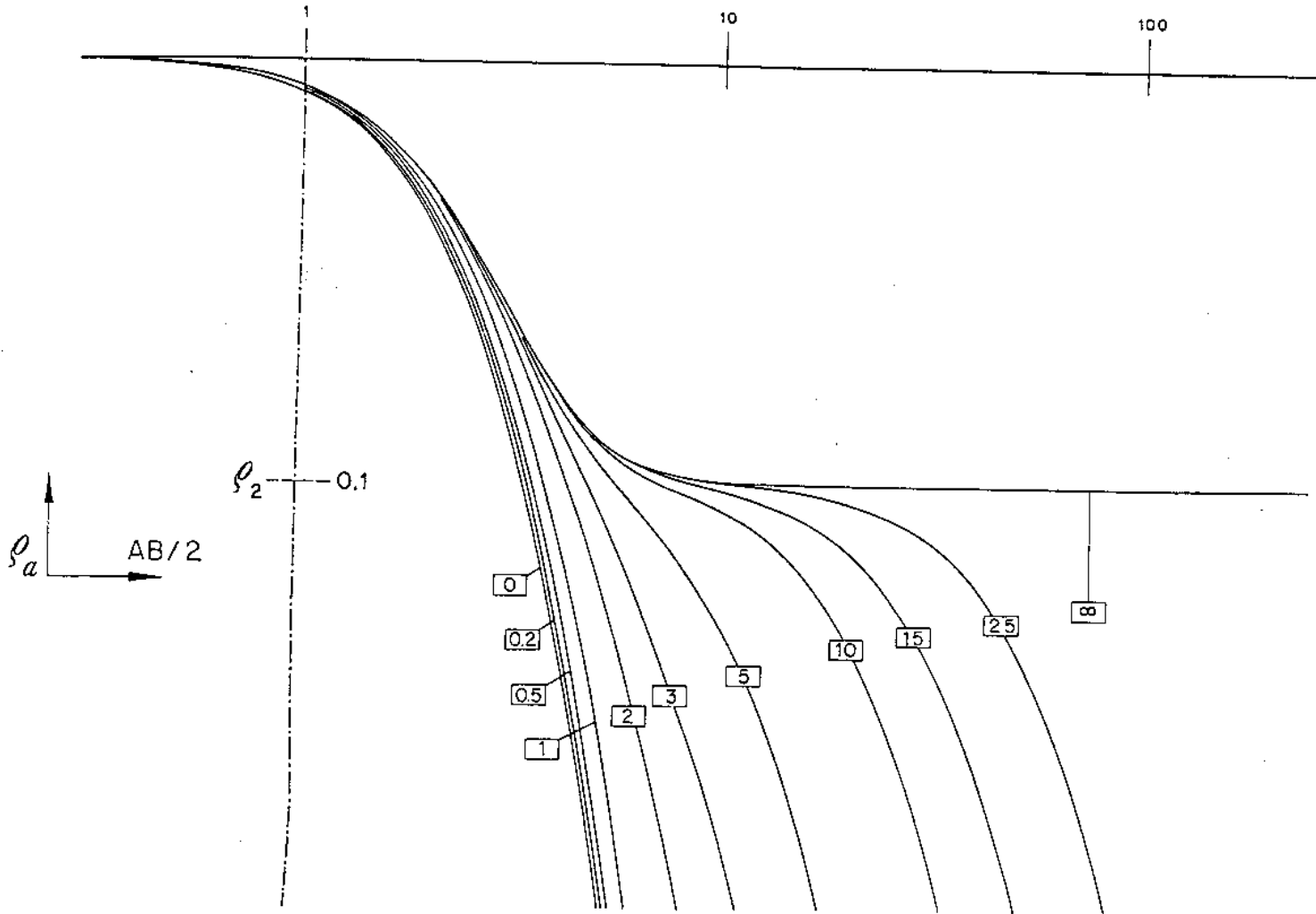


ORELLANA — MOONEY  
MASTER CURVES FOR VES  
CURVAS PATRON PARA SEV.

$E_1 = 1; \rho_1 = 1; E_2 = \square$

Q-11

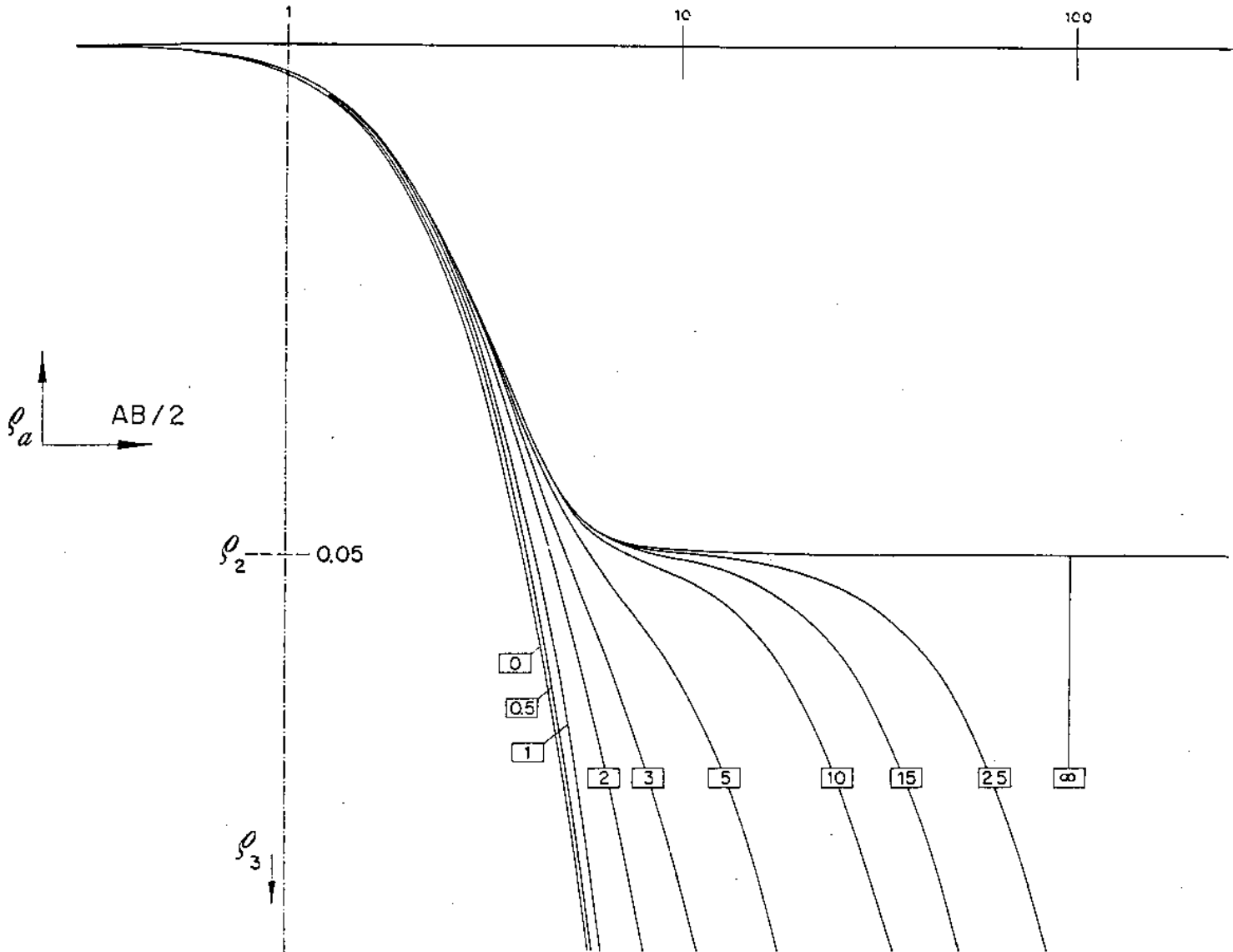
1-0.1-0



$$E_1 = 1: \rho_1 = 1: E_2 = \square$$

Q-12

1-0.05-0

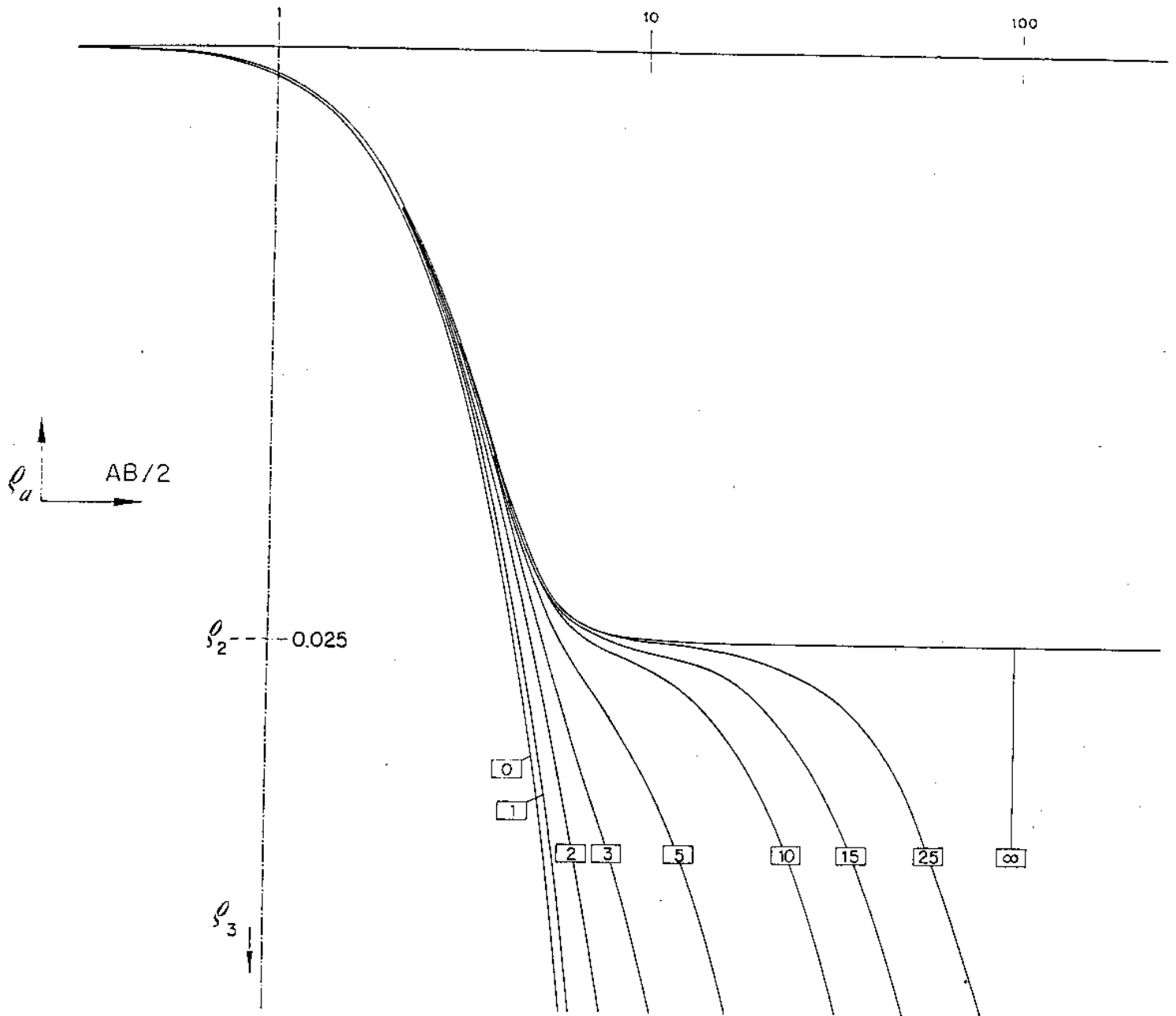


$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

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MASTER CURVES FOR V.E.S.  
CURVAS PATRON PARA SEV.

Q-13

1-0.025-0

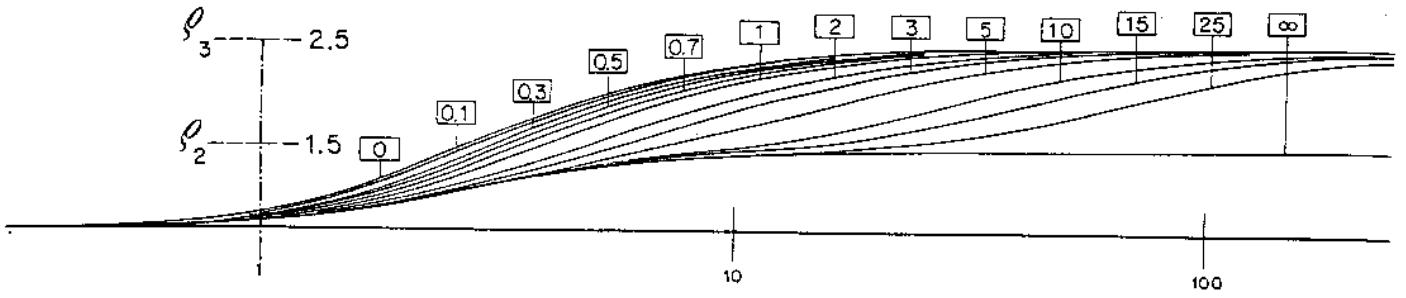


$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

ORELLANA — MOONEY  
MASTER CURVES FOR VES.  
CURVAS PATRON PARA S.E.V.

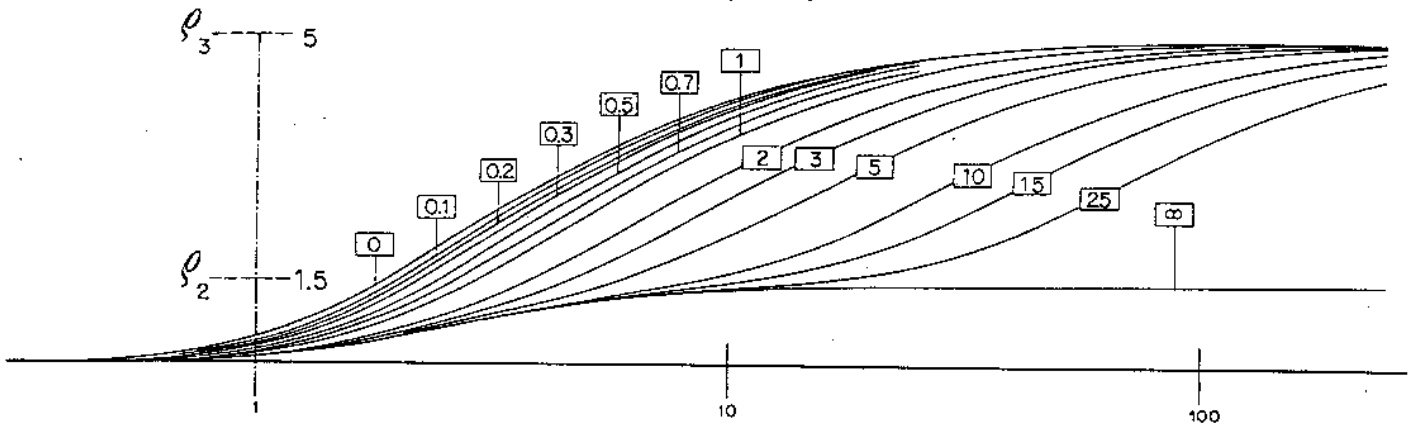
A-1

1-1.5-2.5



A-2

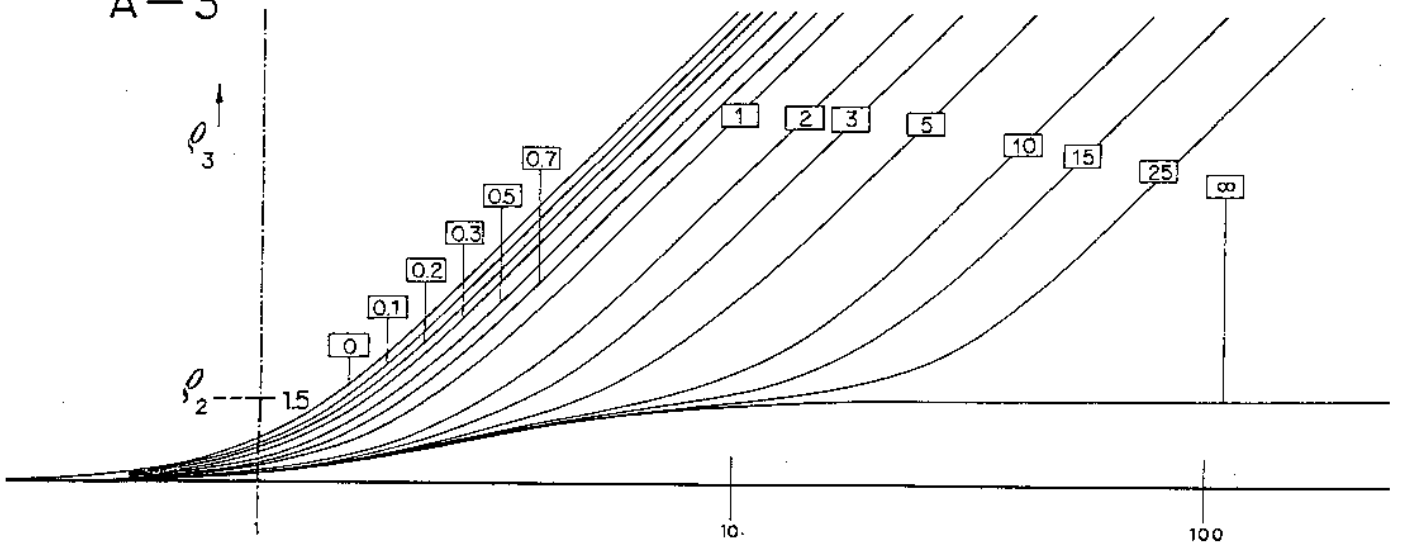
1-1.5-5



$\rho_a$   $\rightarrow$  AB/2

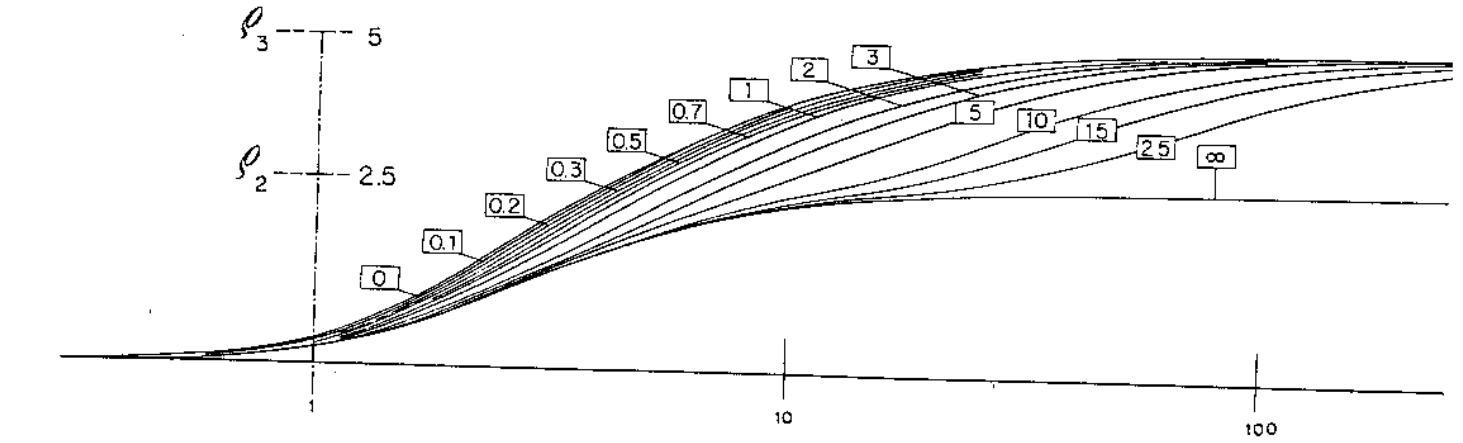
1-1.5-∞

A-3



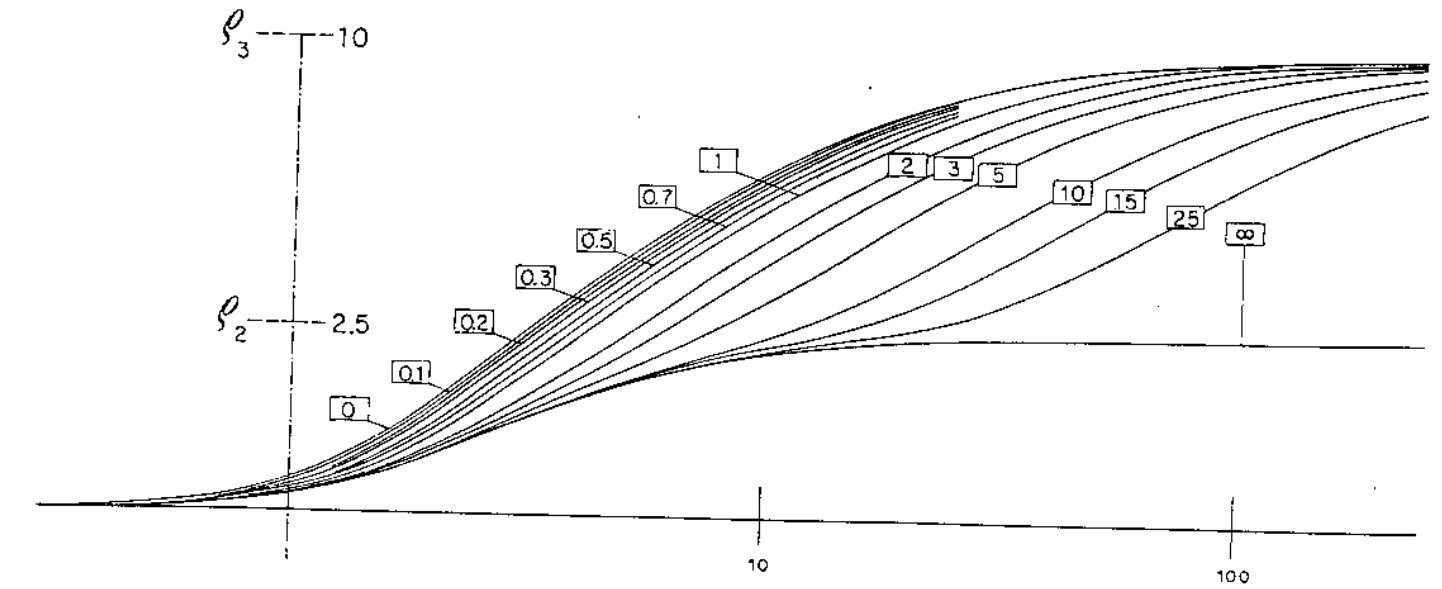
A-4

1-2.5-5



A-5

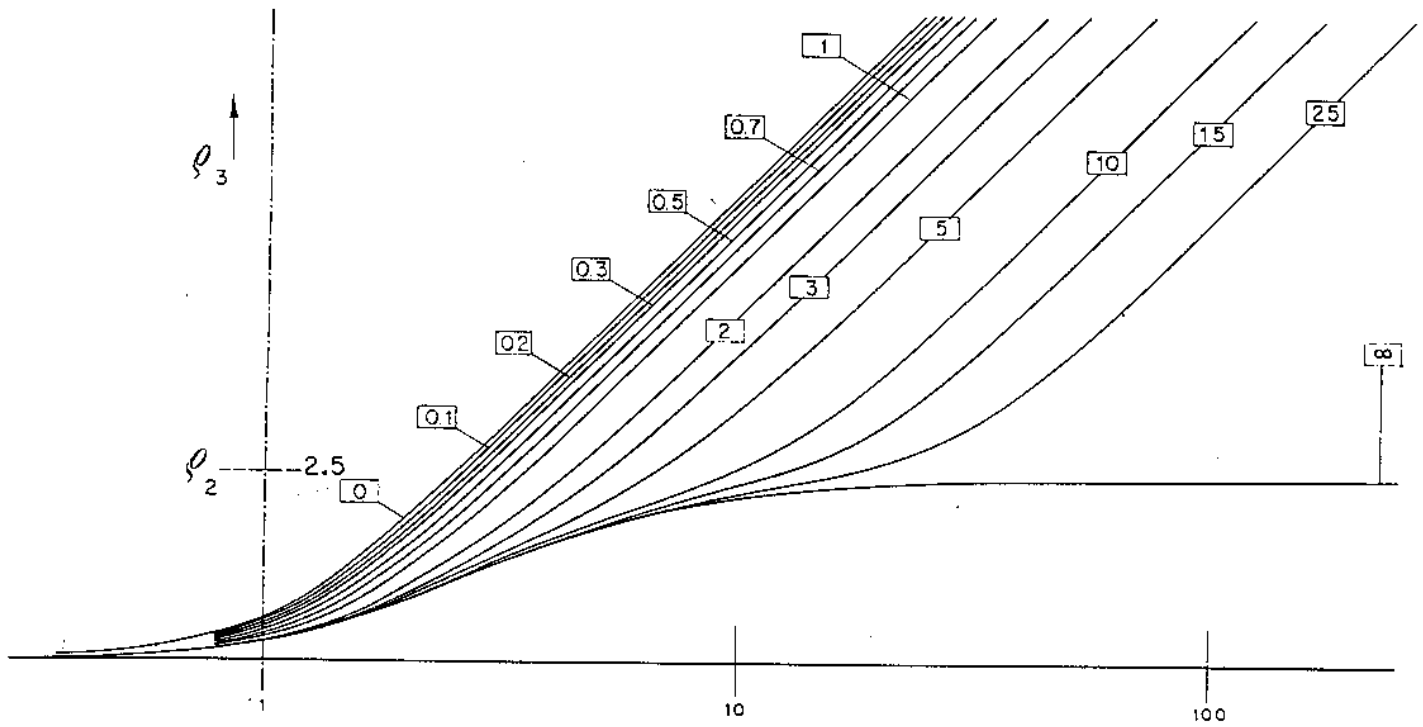
1-2.5-10



$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

A - 6

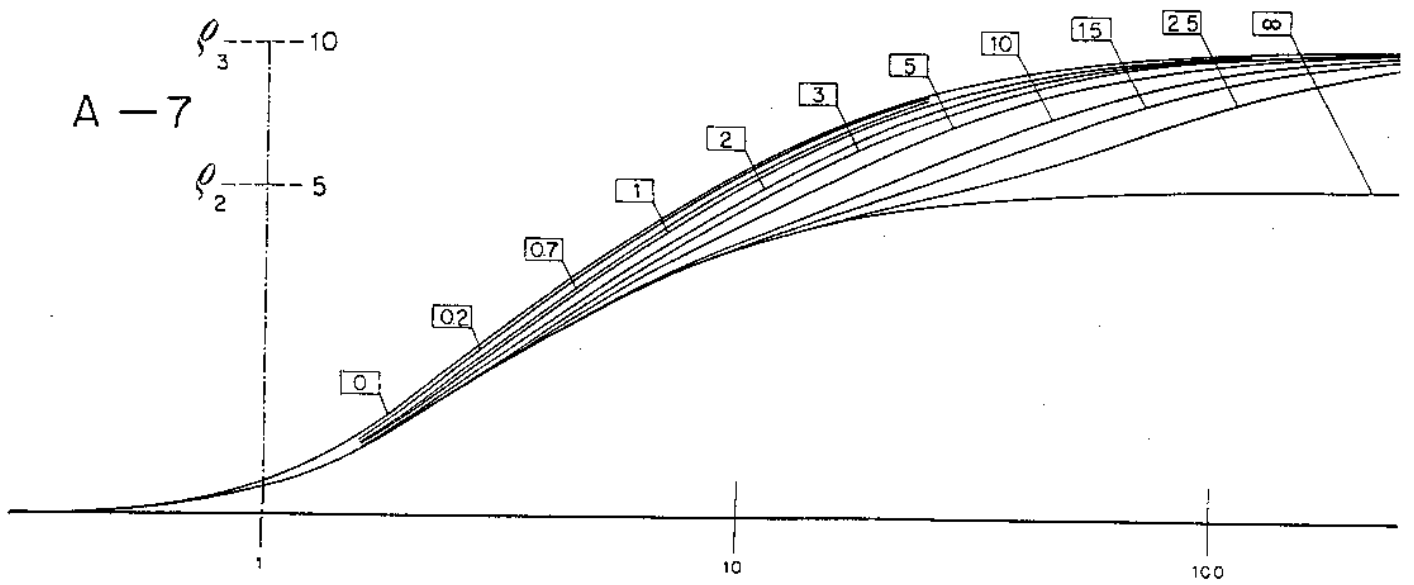
1 - 2.5 - ∞



$\rho_a$   $\rightarrow$  AB/2

1 - 5 - 10

A - 7

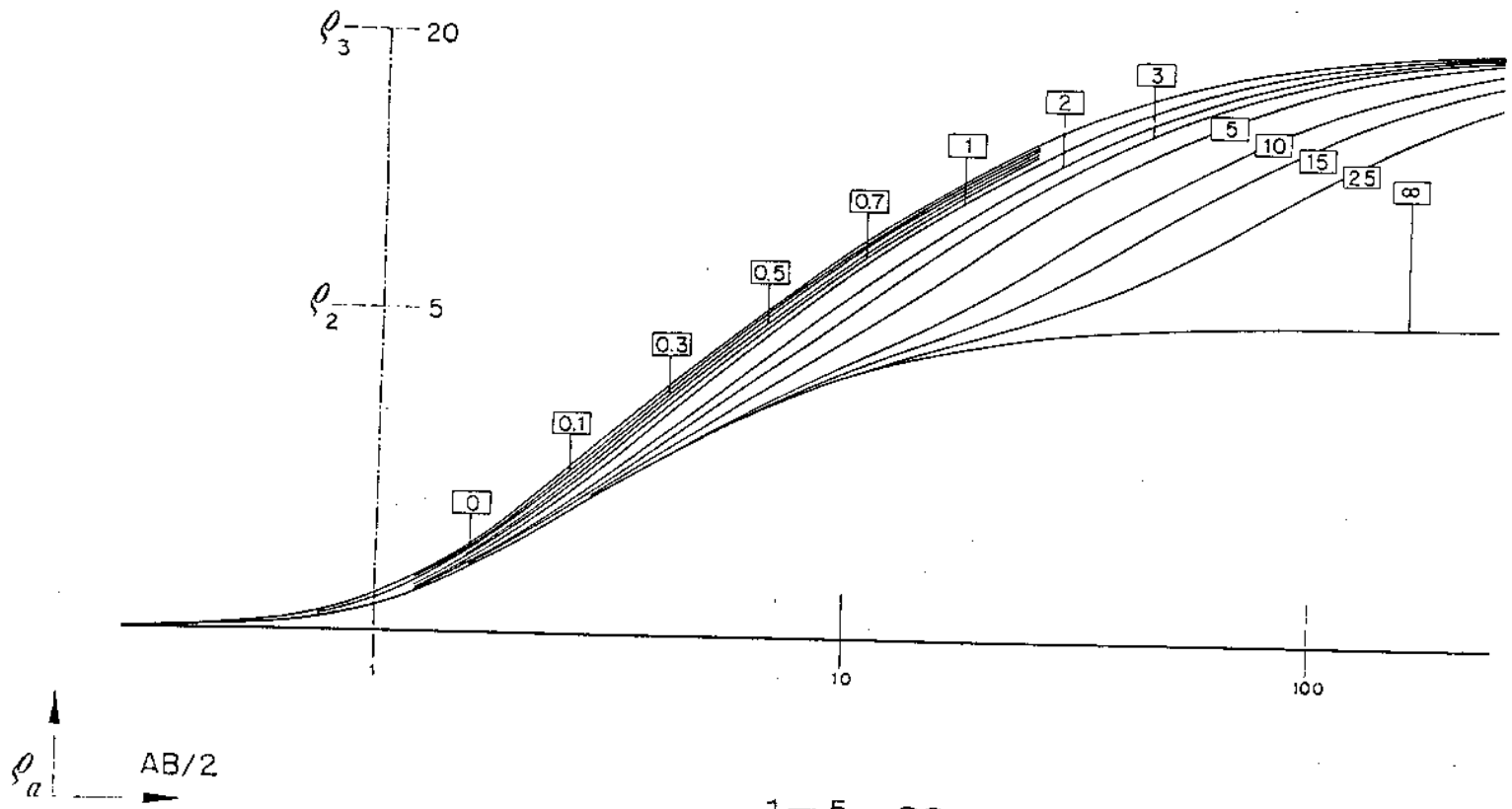


ORELLANA — MOONEY  
 MASTER CURVES FOR V.E.S.  
 CURVAS PATRON PARA SEV.

$E_1 = 1; \rho_1 = 1; E_2 = \square$

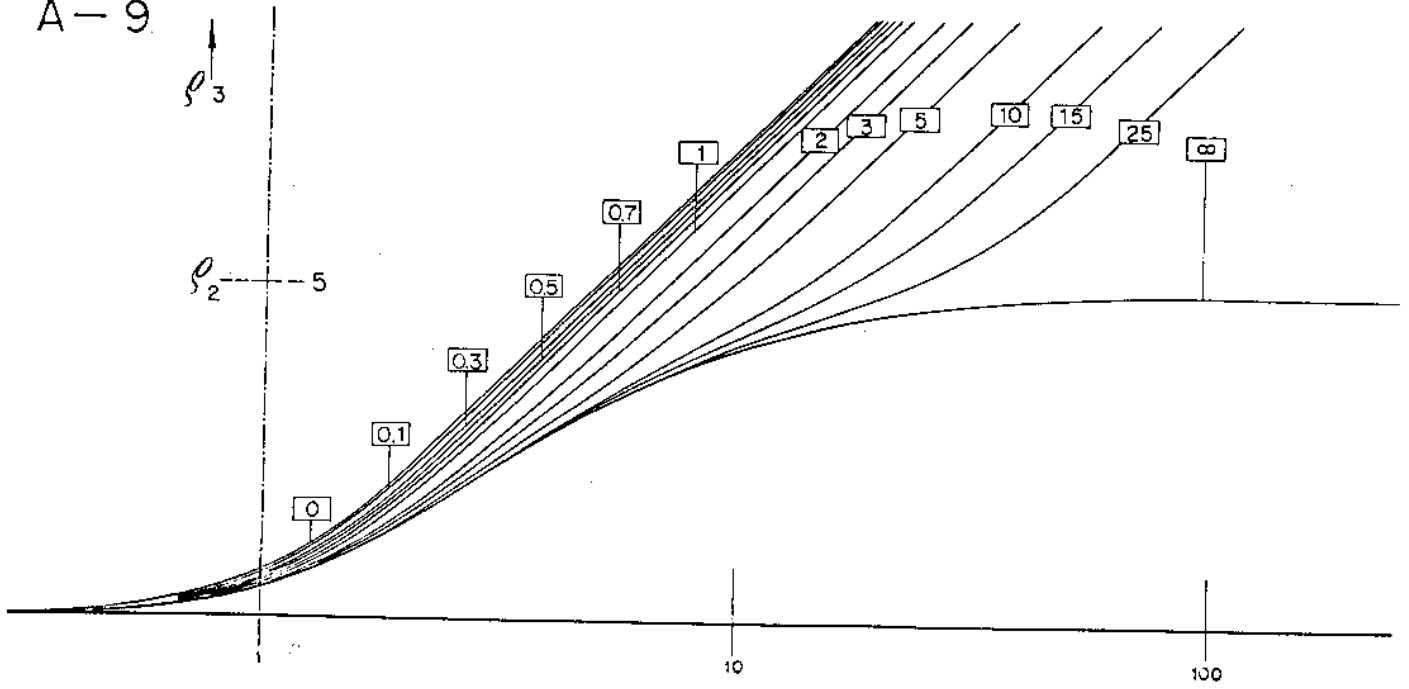
A-8

1-5-20



1-5- $\infty$

A-9

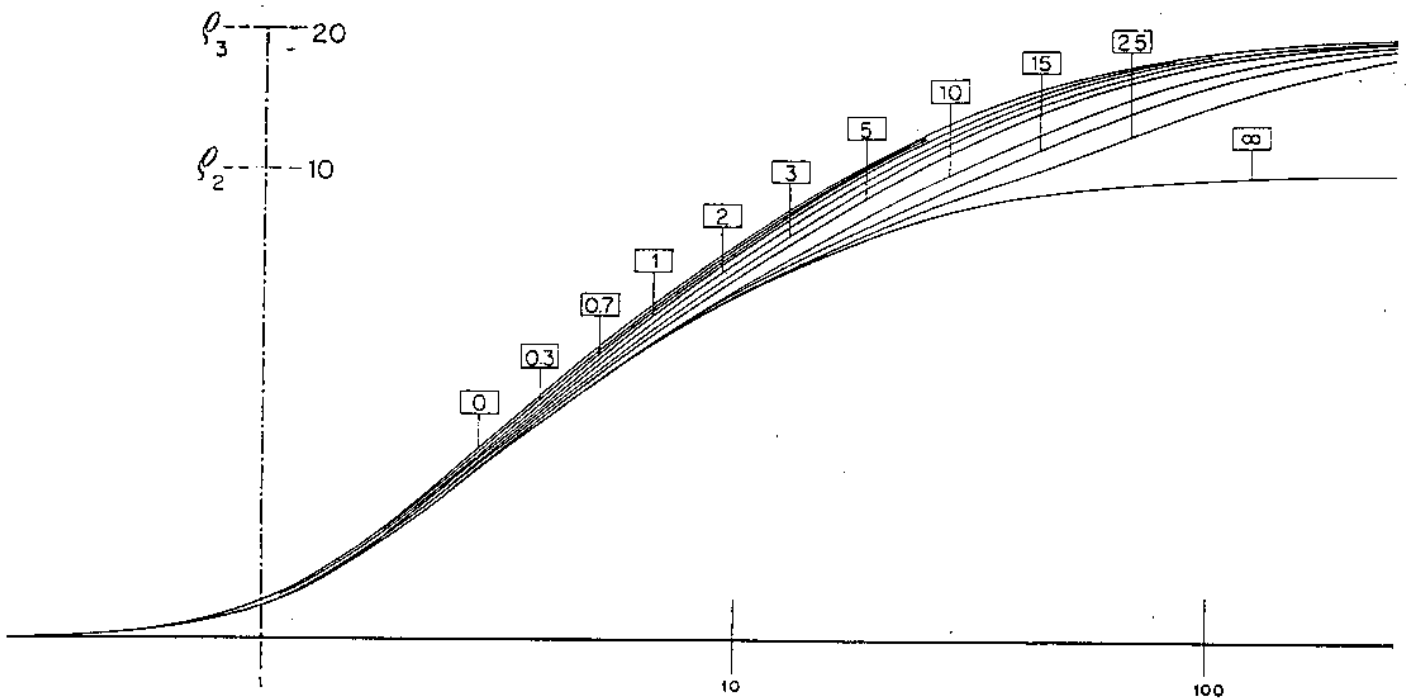


ORELLANA—MOONEY  
 MASTER CURVES FOR V.E.S.  
 CURVAS PATRON PARA SEV.

$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

A-10

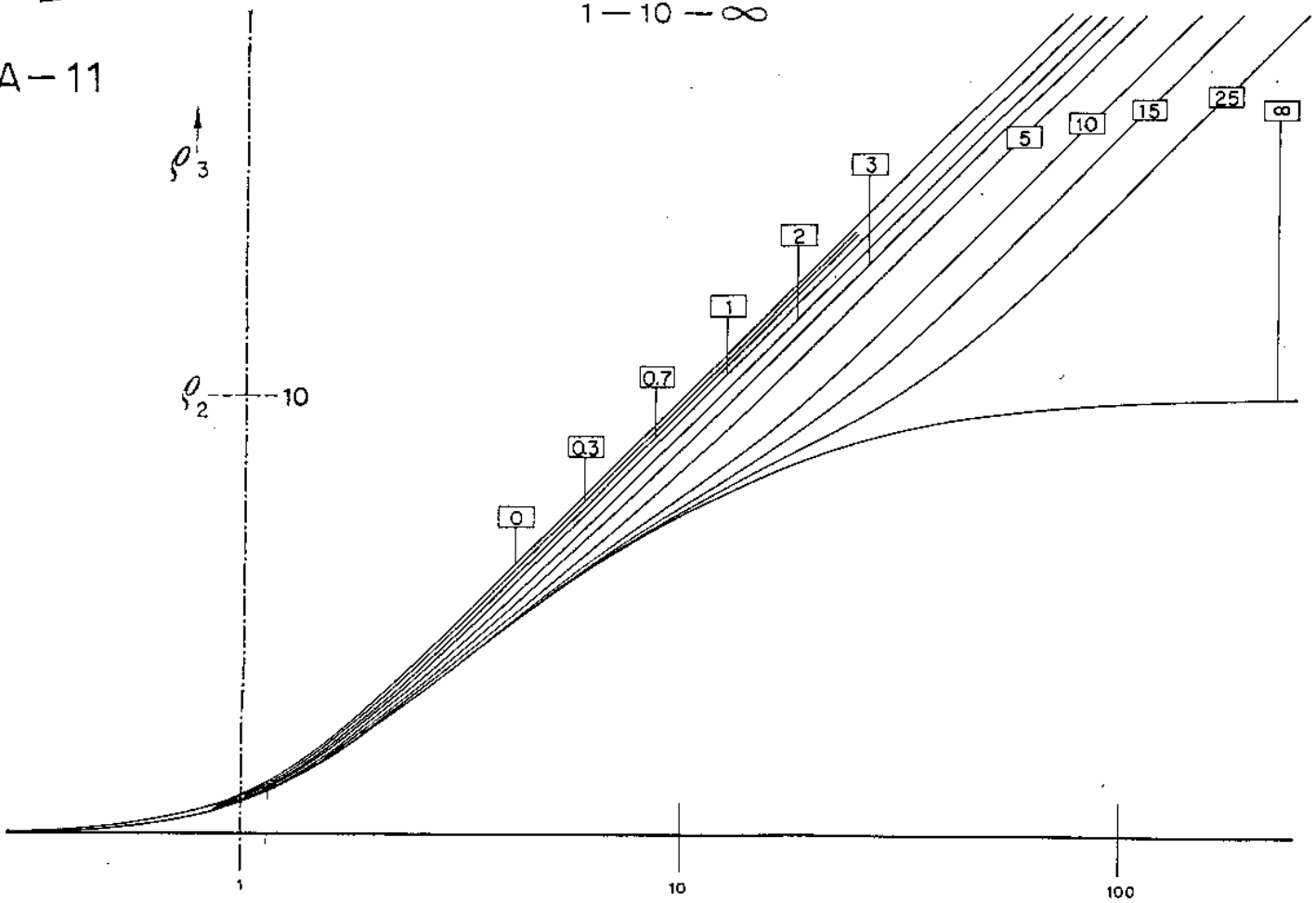
1-10-20



$\rho_a$   $\rightarrow$   $AB/2$

A-11

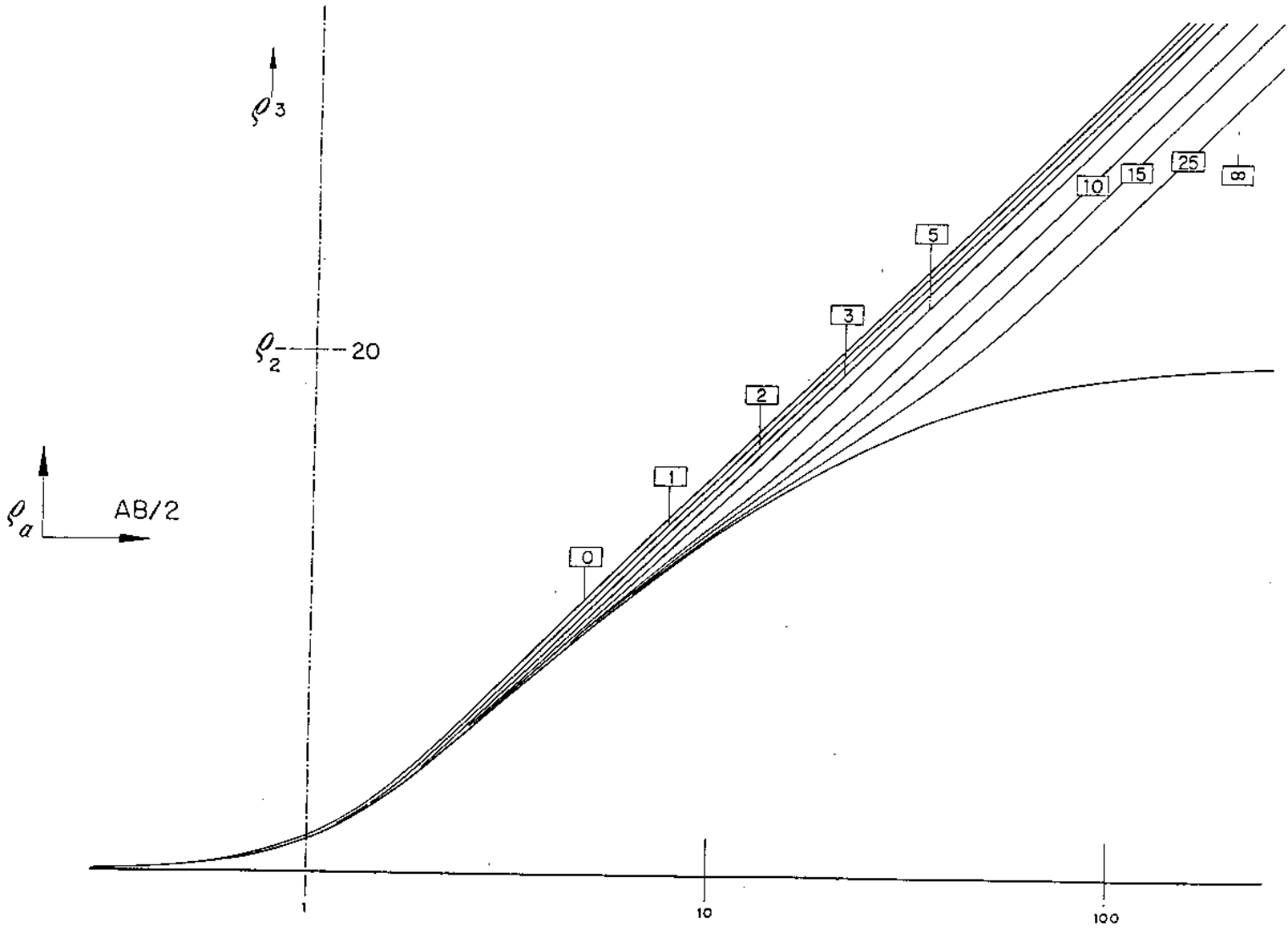
1-10- $\infty$



ORELLANA — MOONEY  
 MASTER CURVES FOR V.E.S.  
 CURVAS PATRON PARA S.E.V.

$E_1 = 1; \rho_1 = 1; E_2 = \square$

1 - 20 - ∞

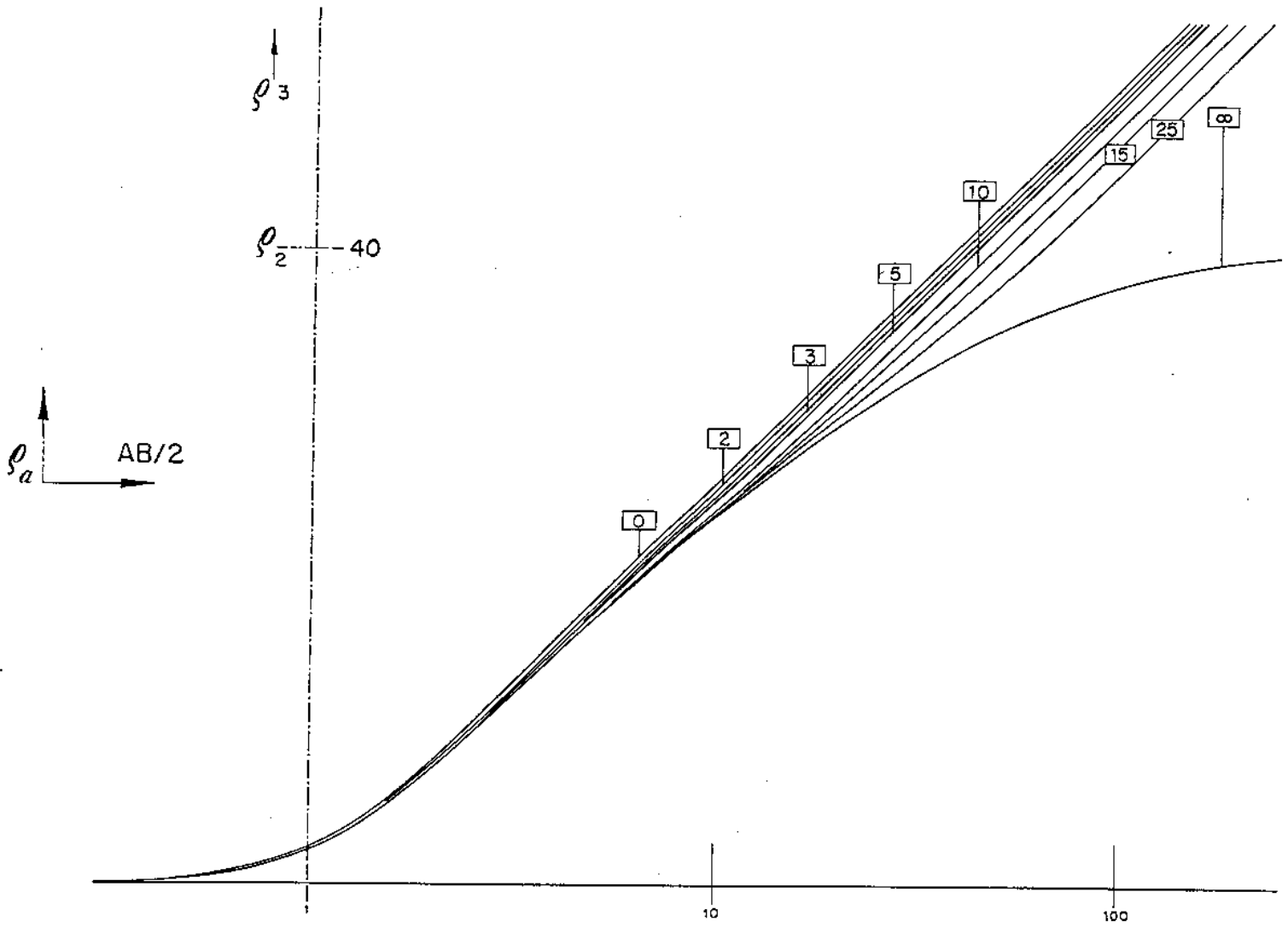


ORELLANA - MOONEY  
 MASTER CURVES FOR VES.  
 CURVAS PATRON PARA SEV.

$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

A-13

1-40-∞



ORELLANA — MOONEY  
MASTER CURVES FOR V.E.S.  
CURVAS PATRON PARA S.E.V.

$$E_1 = 1; \rho_1 = 1; E_2 = \square$$