

	Rhodia Energy		RhEn/AZM/0801
	Truck weigh scale Calibration Data		Author: Américo
			Date: 17Sep2008
			Page: 1 of 5

Paulinia truck scale / Classification & Calibration Evaluation (According to MICT 236/94)

1. Truck scale Classification

According to the table below (translated information from “Tabela 2”(page 4)/MICT 236/94) is possible classifying Paulinia truck scales.

Accuracy class	Value of verification division (e)	Number of values of verification division (n = Max/e)		Minimum load (min)
		Minimum	Maximum	
Special – I	$0.001g \leq e$	50 000		100e
Fine – II	$0.001g \leq e \leq 0.05g$	100	100 000	20e
	$0.1g \leq e$	5 000	100 000	50e
Medium – III	$0.1g \leq e \leq 2g$	100	10 000	20e
	$5g \leq e$	500	10 000	20e
Normal - IIII	$5g \leq e$	100	1 000	10e

Notes:

(1) **Value of verification division (e):** corresponds to the value expressed in weight units used to classify and verify a device.

(2) **Max:** corresponds to the permitted maximum load for weigh scale.

For Paulinia truck scale:

- $e = 10\text{kg}$ (equal smallest scale division)
- $\text{Max} = 80\,000\text{kg}$
- Number of values of verification division = $80\,000\text{kg}/10\text{kg} = 8\,000$
- Minimum load = $20e = 20 \times 10\text{kg} = 200\text{kg}$

The data above confirm the Paulinia truck scale as **accuracy class III**, already informed by manufacturer and indicated in the Certificate of Conformity emitted after calibration tests (see: cell “CLASSE”).

	Rhodia Energy		RhEn/AZM/0801
	Truck weigh scale Calibration Data		Author: Américo
			Date: 17Sep2008
			Page: 2 of 5

2. Calibration Evaluation

2.1 Evaluation of maximum errors permitted for truck scales

Table 4 (ref.: “Tabela 4” (page 6)/MICT 236/94), shown below, provides information about the maximum errors permitted for each kind of weigh scale for the verification which is performed when the scale is installed.

Tabela 4				
Erros máximos permitidos em verificação inicial	Para as cargas m, expressas em valores de divisão de verificação e			
	Classe I	Classe II	Classe III	Classe III
$\pm 0,5 e$	$0 \leq m \leq 50\ 000$	$0 \leq m \leq 5\ 000$	$0 \leq m \leq 500$	$0 \leq m \leq 50$
$\pm 1,0 e$	$50\ 000 < m \leq 200\ 000$	$5\ 000 < m \leq 20\ 000$	$500 < m \leq 2\ 000$	$50 < m \leq 200$
$\pm 1,5 e$	$200\ 000 < m$	$20\ 000 < m \leq 100\ 000$	$2\ 000 < m \leq 10\ 000$	$200 < m \leq 1\ 000$
3.5.2	Os erros máximos permitidos em serviço são iguais ao dobro dos erros máximos permitidos na verificação inicial.			

Notes:

- (1) “**Permitted maximum error**” (**Erro máximo permitido**): correspond to maximum difference, for more or for less, permitted by Regulation between a instrument indication and the correspondent real value, determined by standard loads of reference.
- (2) “**m**”: correspond to the load expressed in kg or e (value of verification division)

	Rhodia Energy	RhEn/AZM/0801
	Truck weigh scale Calibration Data	Author: Américo
		Date: 17Sep2008
		Page: 3 of 5

Using the table 4 above the permitted maximum errors for the truck scale Class III when is installed are:

Permitted maximum error in initial verification	For “m” loads, expressed in values of verification division (e)
+/- 0.5 e	$0 \leq m \leq 500$
+/- 1.0 e	$500 < m \leq 2\,000$
+/- 1.5 e	$2\,000 < m \leq 10\,000$

When the weigh scales are already in service, that is, is not the first calibration (calibration when the weigh scale is installed), the permitted maximum errors, as indicated on Table 4 (item 3.5.2), are the double of the permitted errors.

Therefore for Paulínia truck scales, the permitted maximum errors are:

Permitted maximum error (in service)	Permitted maximum error expressed in kg	For “m” loads, expressed in values of verification division (e)	Load expressed in kg
+/- 1.0 e	+/- 10	$0 \leq m \leq 500$	$0 \leq m \leq 5\,000$
+/- 2.0 e	+/- 20	$500 < m \leq 2\,000$	$5\,000 < m \leq 20\,000$
+/- 3.0 e	+/- 30	$2\,000 < m \leq 10\,000$	$20\,000 < m \leq 80\,000$

The load value (80 000kg), on the last line of the table above, corresponds to the permitted maximum load of Paulínia truck scales.

	Rhodia Energy		RhEn/AZM/0801
	Truck weigh scale Calibration Data		Author: Américo
			Date: 17Sep2008
			Page: 4 of 5

2.2 Calibration Data & Evaluation

Using those criteria shown in 2.1 follow the results obtained by Toledo do Brasil Indústria de Balanças Ltda, accredited company, for each truck scale:

Entrance lane weight scale (BB0090)

Standard load value used on calibration (kg)	Read load value on calibration (kg)	Error between read load value and standard load value		Permitted maximum error in service (MICT 236/94) (kg)
		(%)	(kg)	
0	0	0	0	0
200	200	0	0	+/- 10
5 000	5 000	0	0	+/- 10
11 000	11 020	0.18	20	+/- 20
20 000	20 020	0.10	20	+/- 20
22 000	22 020	0.09	20	+/- 30
20 000	20 000	0	0	+/- 20
11 000	11 020	0.18	20	+/- 20
5 000	5 000	0	0	+/- 10
200	200	0	0	+/- 10
0	0	0	0	0

Exit lane weight scale (BB0335)

Standard load value used on calibration (kg)	Read load value on calibration (kg)	Error between read load value and standard load value		Permitted maximum error in service (MICT 236/94) (kg)
		(%)	(kg)	
0	0	0	0	0
200	200	0	0	+/- 10
5 000	5 000	0	0	+/- 10
11 000	11 010	0.091	10	+/- 20
20 000	20 010	0.050	10	+/- 20
22 000	22 010	0.046	10	+/- 30
20 000	20 010	0.050	10	+/- 20
11 000	11 010	0.091	10	+/- 20
5 000	5 000	0	0	+/- 10
200	200	0	0	+/- 10
0	0	0	0	0

	Rhodia Energy	RhEn/AZM/0801
	Truck weigh scale Calibration Data	Author: Américo
		Date: 17Sep2008
		Page: 5 of 5

3. Conclusion

The data of the calibration test, along with the other required tests, performed by Toledo do Brasil Indústria de Balanças Ltda, accredited company, indicate that the deviations observed between "standard load" and "read load" values, as shown in item 2.2, are considered acceptable when compared with the permitted maximum errors according to the pertinent legislation (Norm 236/94), issued by government body INMETRO. Toledo do Brasil Indústria de Balanças Ltda has in consequence issued certified to conformity for the weight scales (see page 1 of [3] and [4]).