

Technical Requirement for Environmental Products
The Certificable Technical Requirement for Environmental Labelling Products

Energy-saving Fluorescent Lamps

HJBZ 15.1—1997

1 Scope

This technical requirement specifies definition, basic requirements, technical contents and test method for environmental labelling products of energy-saving fluorescent lamps.

This technical requirement shall apply to self- ballasting fluorescent lamps, single-capped fluorescent lamps and single-capped fluorescent lamps, semi-lamps with electronic ballast.

2 Standards cited

Provisions in the following standards are cited in this technical requirement, and therefore form the provisions in this standard. They have the same effectiveness as the technical requirement itself.

GB 15143—1994 A. C. -supplied electronic ballasts for tubular fluorescent lamps-General & safty requirements

GB/T 15144 — 1994 A. C.-supplied electronic ballasts for tubular fluorescent lamps-Performance requirements

GB/T 15555.1—1995 Measurement of total mercury in solid waste by cold atomic absorpition spectrophotometry

ZBK 71003—1989 Single-capped inter-starting fluorescent lamps

In case of the criteria above are revised, the latest version should be applied.

3 Definition

3.1 Energy-saving fluorescent lamps

It refers to tubiform fluorescent lamp whose parts for controlling starter and stabilizing light are mainly electronic components. This technical requirement especially applies to self-ballasting fluorescent lamps and single-capped fluorescent lamps.

3.2 Self- ballasting fluorescent lamps

It refers to the fluorescent lamp with lamp cap, ballast and luminous tube, which integrated into a whole lamp and could not be disassembled without breaking the structure of the lamp.

3.3 Single-capped fluorescent lamps

It refers to low pressure mercury-vapour discharge lamp which has single lamp cap and inter-starting or outer-starting device. Much of its visible light is generated by discharged UV bursting fluorescent powder layer.

3.4 Semi- lamps

It refers to a product similar to self-ballasting fluorescent lamp, however, its illuminating source and starter are replaceable.

4 Basic requirements

4.1 Quality of products should conform with requirements specified in GB 15143—1994, GB/T 15144—1994, ZBK 71003—1989.

4.2 Pollutant emission of the company should be obliged to conform with pollutant emission standards nationally or locally.

Approved by SEPA on 3/14/1997

Entered into force on 3/14/1997

5 Technical contents

5.1 Line power of self- ballasting fluorescent lamp and semi-lamp with single-capped fluorescent lamp products should fit into requirement of high-capacity factor $\lambda \geq 0.85$ in GB/T 15144—1994.

5.2 Luminous flux of self- ballasting fluorescent lamp and single-capped fluorescent lamp should meet requirement of annex A.

5.3 Life of self- ballasting fluorescent lamp and single-capped fluorescent lamp should not be lower than 6000h.

5.4 Mercury content in self- ballasting fluorescent lamp and single-capped fluorescent lamp should be $\leq 10\text{mg}$.

6 Test

6.1 Methods specified in GB/T 15144- 1994 should be adopted for testing power factor in products.

6.2 Method specified in ZBK 71003—1989 should be adopted for testing light efficiency of products.

6.3 Life cycle of product should be determined by adopting mid-point method.

6.4 Test of mercury content in products

6.4.1 Summary of test method of mercury content in products see annex B.

6.4.2 Mercury content in products should be determined according to the method specified in GB/T 15555.1—1995.

Annotations:

This technical requirement has been prepared by Department of Science, Technology and Standards of State Environment Protection Administration.

The State Environment Protection Administration keeps the right of interpretation for this technical requirement.

Annex A (annex of the standard)

Requirement for luminous flux of energy-saving fluorescent lamps

Unite: Lm

Lamp type	Specification of lamp W	Self-ballast lamp						Single-capped fluorescent lamps					
		Nominal value			Liminal value			Nominal value			Liminal value		
		RR	RL	RN	RR	RL	RN	RR	RL	RN	RR	RL	RN
Double tubes	5	214	225	238	205	216	228	225	238	250	216	228	240
	7	342	360	380	298	331	350	360	380	400	331	350	368
	9	513	540	570	435	473	483	540	570	600	473	483	525
	11	684	720	760	630	662	700	700	730	770	613	652	673
	13	760	803	846	676	712	751	800	845	890	712	751	791
	36	2360	2484	2622	2171	2285	2412	2484	2622	2760	2285	2412	2539
Quadruple tubes	5	208	219	231	199	210	221	219	231	243	210	221	213
	7	332	349	369	289	321	339	349	369	388	321	339	357
	9	498	524	553	436	458	484	524	553	582	458	484	509
	10	564	594	629	513	546	577	594	627	660	546	577	607
	11	663	698	737	610	634	678	698	737	776	634	678	714
	13	753	776	817	656	690	729	774	817	860	690	729	767
	18	1037	1092	1152	953	1004	1059	1092	1152	1213	1004	1059	1115
Hexa-tubes	13	753	776	817	656	690	729	774	817	860	690	729	767
	18	1069	1125	1188	953	1004	1059	1092	1152	1213	1004	1059	1115
	26	1467	1544	1630	1350	1421	1500	1544	1630	1716	1421	1500	1579

Note: In the case of specification of lamp does not listed in the table, higher level of specification standard should be adopted.

Annex B (Annex of the standard)

Summary of method for determining mercury content in energy-saving fluorescent lamps

The annex provides summary of method for determining mercury content in energy-saving fluorescent lamps; detailed testing method refers to GB/T 15555.1—1995.

Measuring method of mercury content

Detach luminescent tube of a lamp from plastic and electronic part; and cut off the wire close to glass as much as possible. Put the luminescent tube into a proper size plastic bottle with turnbuckle; put into a porcelain ball with ~ 25mm diameter and 25ml high-purity nitric acid; cover the plastic bottle closely, and shake for several minutes to break the luminescent tube into fractionlet. In this process, it needs to loose bottle cap to release possible pressure, and then let substances in the bottle react for 30min by shaking the bottle from time to time.

Collect solution in the bottle by nitric acid proof filter paper into a 100ml calibrated flask. Put potassium dichromate into the flask, and the ultimate concentration of chrome should be 1000ppm. Add pure water into the flask to come to a certain volume.

The concentration range of preparative mercury standard sample should be come to 200ppm. Method specified in GB/T 15555.1—1995 should be adopted to measure the sample; and mercury level in each lamp can be calculated from the measuring results and known solution volume.