

# **EL725. Synthetic Resin Moulding Material for Structures**

[EL725-2008/2/2012-36]



## **1. Scope**

This criteria applies to the moulding material of synthetic resin product for structures that require durability in order to withstand continuous loading, such as the housing of electric/electronic products or the interior material of vehicles, in a form of pallet, flake or chip before moulding. Rubber type polymers and paste type products, however, shall be excluded.

## **2. Definitions**

### 2.1

“Synthetic Resin” refers to single or multiple types of polymer product, and a polymer product with added additive or filler for performance enhancement.

### 2.2

“Waste Synthetic Resin” refers to “post-consumer waste synthetic resin” and “pre-consumer waste synthetic resin”

### 2.3

“Post-Consumer Waste Synthetic Resin” refers to a waste synthetic resin generated at the end of the life cycle of a product after the product has been distributed through the normal distribution cycle and used for its intended purpose.

### 2.4

“Pre-Consumer Waste Synthetic Resin” refers to a waste synthetic resin that is generated as a form of scrap from the manufacturing process, which could not be used as a product. However, waste synthetic resin that is generated from a product manufacturing process and reused in the same manufacturing process as a raw material shall be excluded.

## **3. Certification Criteria**

### **3.1 Environmental Criteria**

#### 3.1.1

With respect to the consumption of resources in the manufacturing process, among the component materials of the product other than organic and inorganic additives, the contents of

the inorganic additives contained in the product shall be lower than 40 weight%, and the use of 'post-consumer waste synthetic resin' shall be over 25 weight%.

### 3.1.2

With respect to the use of chemical substances in the manufacturing process and recyclability when the product is disposed, the product shall meet the following requirements.

#### 3.1.2.1

Product shall not use organic tin compound (TBT, TPT), lead, cadmium, mercury and their compounds and hexavalent chromium.

#### 3.1.2.2

PBBs (polybrominated biphenyls), PBDEs (polybromodiphenyl ethers) or SCCP (short-chain chlorinated paraffin (C=10~13)) with a chlorine concentration of over 50% shall not be used as flame retardant substance.

#### 3.1.2.3

Harmful substances contained in the product shall meet the following requirements.

Item	Lead (Pb)	Cadmium (Cd)	Mercury (Hg)	Hexavalent Chrome (Cr <sup>6+</sup> ) <sup>Note)</sup>	PBBs	PBDEs
Criteria [mg/Kg]	≤ 1,000	≤ 100	≤ 1,000	≤ 1,000	≤ 1,000	≤ 1,000

Note) The requirement is considered as having been satisfied if the total content of chromium (Cr) is below 1,000 mg/kg.

#### 3.1.2.4

Chemical substances which are labeled and classified into one of the following categories in accordance with UN GHS (Globally Harmonized System of Classification and Labelling of Chemicals) shall not be used in a product.

Note) Classification shall be tentatively based on the Part 3 of the EU Regulation (EC) No. 1272/2008 Appendix VI (Harmonized Classification and Labeling Tables).

H350 : may cause cancer

H340 : may cause genetic defects

H373 : may cause damage to organs through prolonged or repeated exposure

H360F : may damage fertility

H360FD : may damage fertility; may damage the fetus

H361d : suspected as damaging the fetus

H341 : suspected of causing genetic defects

### 3.1.3

With respect to reuse in the manufacturing process or reusability when the product is disposed, a product shall be one type of polymer (homo-polymer or co-polymer) or recyclable mixing material (polymer alloy).

Note) If synthetic resin is mixed, 'compatibility between thermoplastic resins' for the purpose of evaluation of recyclability of mixed synthetic resin is as follows, where the level that does not compromise the recyclability is '3' or higher.

		Additive of plastic											
		PE	PVC	PS	PC	PP	PA	POM	SAN	ABS	PBTP	PETP	PMMA
Plastic Matrix	PE	1	4	4	4	1	4	4	4	4	4	4	4
	PVC	4	1	4	4	4	4	4	1	2	4	4	1
	PS	4	4	1	4	4	4	4	4	4	4	4	4
	PC	4	3	4	1	4	4	4	1	1	1	1	1
	PP	3	4	4	4	1	4	4	4	4	4	4	4
	PA	4	4	3	4	4	1	4	4	4	3	3	4
	POM	4	4	4	4	4	4	1	4	4	3	4	4
	SAN	4	1	4	1	4	4	4	1	1	4	4	1
	ABS	4	2	4	1	4	4	3	4	1	3	3	1
	PBTP	4	4	4	1	4	3	4	4	3	1	4	4
	PETP	4	4	3	1	4	3	4	4	3	4	1	4
PMMA	4	1	3	1	4	4	3	1	1	4	4	1	
Remark	1: Good, 2: Good in limited range, 3: Good if amount is small, 4: Not good Source: German Engineer Association (VDI: Verein Deutscher Ingenieure) VDI 2243 Part 1												

## 3.2 Quality Criteria

### 3.2.1

The product shall have a level of performance and quality that can be recognized in the applicable industry where the product is used.

### 3.2.2

If there is a Korean Industry Standard that is applicable to the corresponding product, the corresponding product shall satisfy the applicable quality and performance standards.

### 3.2.3

The items corresponding to '3.1 Environmental Criteria' shall be excluded from the requirements of 3.2.1 and 3.2.2 specified above.

## 3.3 Consumer Information

### 3.3.1

Indication on the items that the product contributes to the reasons for certification (recycling of available resources or resource saving, reduction of harmful substance) while the product is used

Example) Statements that indicate the ratio of used recycled synthetic resin and recyclability after product is used (applicable to the product that can be recycled only), features related to quality and safety such as non-use of harmful substances

## 4. Test Methods

Certification Criteria		Test and Verification Methods
Environmental Criteria	3.1.1	Verification of submitted documents
Environmental Criteria	3.1.2	3.1.2.1 ~ 3.1.2.2 Verification of submitted documents or test report issued by an accredited testing laboratory in accordance with the applicable standards
		3.1.2.3 Test report issued by an accredited testing laboratory in accordance with the test method specified in 4.1 and 4.2 of 'Test Methods'
	3.1.1.4 Verification of submitted documents	
	3.1.3	Verification of submitted documents
Quality Criteria	3.2.1	Verification of submitted documents that can prove the level of quality <sup>Note)</sup>
	3.2.2	Test report issued by an accredited testing laboratory in accordance with the applicable standards or certificate, in accordance with the equivalent or higher standards
	3.2.3	Test report issued by an accredited testing laboratory in accordance with 3.1, the Eco-Label certification criteria specific to the target product, or a certificate in accordance with the equivalent or higher standards
Consumer Information		Verification of submitted documents

Note) Measurement result based on an internationally acceptable objective test method shall be specified.

## **4.1 General Matters**

### 4.1.1

As a general rule, one test sample shall be prepared for each applicable product. If more than one test sample is required, however, the required number of samples shall be provided.

### 4.1.2

Test samples shall be collected at random by a certification institute from the products available in the market or stored in the manufacturing facility.

### 4.1.3

The result of the test shall be numerically set according to KS Q 5002 (Statistical interpretation of data – Part 1: Statistical presentation of data)

## **4.2 Test method for the criteria related to the restriction on the use of harmful substances**

### 4.2.1

Method of testing for contents of harmful substances

Note) This is an example method to verify the contents of lead (Pb), cadmium (Cd), mercury(Hg), hexavalent chromium ( $\text{Cr}^{6+}$ ), PBBs and PBDEs. The contents can be verified by other internationally accepted methods in addition to this method. In this case, the detailed test method including the pre-treatment method shall be specified, and the validity of the specified test method shall be reviewed and judged through the deliberation of the Eco-Label Certification Deliberation Committee.

#### 4.2.1.1

Test samples for testing the harmful substance contents shall be collected at random by a certification institute.

#### 4.2.1.2

Test samples for testing the contents shall be made homogenous through treatment such as grinding to the basic component level, as a general rule.

#### 4.2.1.3

Method used to analyze the contents of lead (Pb), cadmium (Cd), mercury(Hg), hexavalent chromium ( $\text{Cr}^{6+}$ ), total chromium (Cr), PBBs and PBDEs.

- a) Lead (Pb), cadmium (Cd): KS M 0016 (General rules for atomic absorption spectrochemical analysis), KS M 0032 (General rules for ICP emission spectrochemical analysis) and inductively coupled plasma mass spectrometry (ICP-MS)
- b) Mercury (Hg): Atomic absorption spectrochemical analysis by using gold amalgamation method and KS M 0016 (General rules for atomic absorption spectrochemical analysis)
- c) Hexavalent chromium ( $\text{Cr}^{6+}$ ): Ultraviolet spectrophotometric analysis by diphenylcarbazide and Ultraviolet spectrophotometric analysis by lead acetate trihydrate
- d) Total chromium (Cr): KS M 0016 (General rules for atomic absorption spectrochemical analysis), KS M 0032 (General rules for ICP emission spectrochemical analysis) and inductively coupled plasma mass spectrometry (ICP-MS)
- e) PBBs, PBDEs: KS M 0031 (General rules for gas chromatographic analysis), KS M 0027 (General rules for analytical methods in gas chromatography mass spectrometry), KS M 0033 (General rules for analytical methods in high performance liquid chromatography)

## **5. Reasons for Certification**

“Recycling or available resources or resource saving, reduction or harmful substance”