



轻工产品与食品接触材料安全测试

HARDGOODS SAFETY TEST TO FOOD CONTACT MATERIALS



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与食品接触材料介绍 FOOD CONTACT MATERIALS

“食品接触材料”Food Contact Materials (简写：FCM)是指产品在正常使用中与食品有接触的材料。涉及的产品包括：

- 食品包装
- 餐具、厨具
- 食品加工机械
- 厨电产品等

食品接触材料包括：

- 塑料、树脂
- 橡胶、硅胶
- 金属、合金
- 纸张、纸板
- 玻璃、陶瓷、搪瓷
- 着色剂、印刷油墨等

食品接触材料及制品可能会在与食品接触的过程中影响食品的气味、味道以及颜色，更可能会释放出一些有毒化学成分如重金属、有毒添加剂，这些化学成分迁移到食品中而被人体摄入，危害人类健康。

因此，食品接触材料的质量安全问题一直被世界各国所关注。近年来，主要贸易国纷纷出台愈为严格的法律法规并完善监管机制，以消除质量隐患，加强食品接触材料的安全管理。

Food contact materials (FCM) are materials and articles intended to come into contact with food, including:

- Food Packaging
- Tableware, Kitchenware
- Food Processing Machines
- Electrical Kitchen Appliances, etc.

These products may contain FCM such as:

- Plastic, Resin
- Rubber, Silicone
- Metal, Alloy
- Paper, Paperboard
- Glass, Ceramic, Enamel
- Colorants, Printing Inks, etc.

FCM have potential risks on adverse effects on taste, odor and color of foods, migration of hazardous constituents such as heavy metals and additives to food which endanger human health.

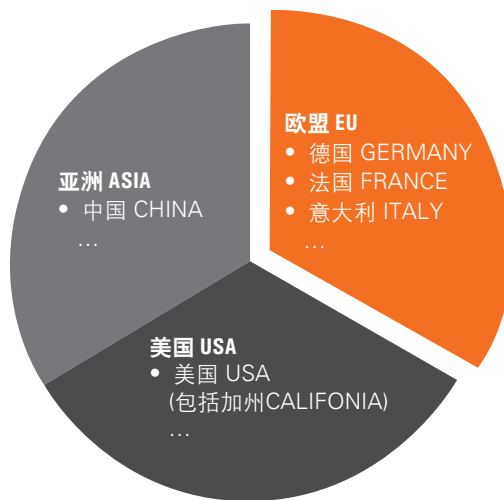
Legislations on the safety of FCM can be found around the world. In recent years, more rigorous legislations have been promulgated and more perfect mechanisms have been established by major trading nations so as to eliminate hidden quality dangers and strengthen the safety management of FCM.

全球与食品接触材料法规简介

GLOBAL FOOD CONTACT MATERIAL REGULATION SUMMARY

根据全球不同国家和地区制定的关于食品接触材料法律法规特点，全球食品接触材料安全要求大致分为以下三大区域：

According to the characteristics of the regulations of the different countries and regions on food contact materials, global food contact materials safety requirements can be roughly divided into three major regions.



欧洲区域 EU

欧盟食品级框架法规(EC) No. 1935/2004全称：在欧盟成员国销售的与食品接触的产品必须符合该项法规的相关要求。

Regulation (EC) No. 1935/2004 of THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 October 2004 – on materials and articles intended to come into contact with food and repealing Directives 80/590/EEC and 89/109/EEC.

框架法规(EC) No. 1935/2004对与食品接触类产品不同材料的要求及测试项目汇总：

Regulation (EC) No. 1935/2004 for FG Product with Different Materials and Testing Capability:

化学测试 CHEMICAL TEST

材质类型 MATERIAL TYPE	法规 REGULATION	测试项目 TESTING ITEMS
塑料 Plastic	EU 10/2011	全面迁移 Overall Migration 可溶性重金属 Soluble Heavy Metal 特殊迁移例如甲醛特殊迁移(针对美耐皿) 初级芳香胺特殊迁移(针对聚酰胺) Specific Migration Such As Specific Migration Of Formaldehyde (For Melamine) Specific Migration Of Aromatic Amine (For PA)
有机涂层 Organic Coating	AP(2004)1	全面迁移 Overall Migration 可溶性重金属 Soluble Heavy Metal 特殊迁移例如环氧衍生物特殊迁移(针对环氧涂层) Specific Migration Such As NOGE (For PTFE Coating) 全氟辛烷磺酸盐特殊迁移(针对聚四氟乙烯涂层) Specific Migration Of PFOS (For Non-Stick Coating)
硅胶 Silicone Rubber	AP(2004)5	全面迁移 Overall Migration 挥发性有机物 VOM
橡胶 Rubber	AP(2004)4 & 93/11/EEC	全面迁移 Overall Migration 亚硝胺和亚硝基化合物 Nitrosamine And Nitrosatable Substances 初级芳香胺特殊迁移 Specific Migration Of Aromatic Amine
纸制品 Paper	AP(2002)1	可溶性重金属 Extractable Heavy Metal 五氯苯酚 Pentachlorophenol (PCP) 防腐效应 Preserving Effect 二苯甲酮和4-甲基二苯甲酮特殊迁移 Specific Migration Of Benzophenone And 4-Methylbenzophenone 颜色迁移(仅针对有颜色的纸) Migration Of Colorants (Only For Colour Paper)

材质类型 MATERIAL TYPE	法规 REGULATION	测试项目 TESTING ITEMS
金属 Metal	Regulation (EC) No.1935/2004 & CM/Res(2013)9	可溶性重金属(银, 铝, 铜, 铬, 钴, 铁, 锰, 钼, 镍, 锡, 钒, 锌, 砷, 钡, 铍, 镉, 汞, 锂, 铅, 铈, 铊) Extractable heavy metal: 21 E (Ag, Al, Cu, Cr, Co, Fe, Mn, Mo, Ni, Sn, V, Zn, As, Ba, Be, Cd, Hg, Li, Pb, Sb, Tl)
木制品 Wood	Regulation (EC) No.1935/2004	甲醛 Formaldehyde, 五氯苯酚 Pentachlorophenol (PCP)
陶瓷, 玻璃, 搪瓷 Ceramic, Glass, Enamel	2005/31/EC (84/500/EEC)	可溶性铅镉 Extractable Lead And Cadmium

物理测试 PHYSICAL TEST

产品类别 PRODUCT TYPE	测试标准/测试项目 TESTING ITEMS
陶瓷制品 Ceramic	热冲击测试 Thermal Shock Resistance (EN 13258, EN 1183, ASTM C149, ASTM C554)
玻璃制品 Glass	洗碗机测试 Dishwasher Safe Test (EN 12875, ASTM C676, SGS内部方法) 微波炉测试 Microwave Safe Test (EN 15284, SGS内部方法) 撞击强度 Physical Impact Test (EN 12980, ASTM C368) 陶瓷吸水率 Ceramic Water Absorption (EN 1217, ASTM C373) 耐高低温测试 Extreme Temperature Test (SGS内部方法 SGS In House Method)
炊具 Cookware	EN 12983-1, Cookware Manufacturer Association (CMA) engineering standards
烤具 Utensils for baking	EN 13834, Cookware Manufacturer Association (CMA) engineering standards
刀餐具 Tableware	BS 5577, ISO 8442-1, ISO 8442-2, ISO 8442-5
保温容器 Insulated Container	EN 12546-1, EN 12546-2, EN 12546-3

德国、法国、意大利对食品级的额外要求

FOODGRADE SPECIFIC REQUIREMENTS OF GERMANY, FRANCE AND ITALY

相关法规 RELATED REGULATIONS

德国: LFGB

法国: French Décret 2007-766, DGCCRF Information Notice 2004/64 with amendments

意大利: Law No.283 of 30.4.1962 and the Ministerial Decree of 21 March 1973 with its amendments

德国 GERMANY		法国 FRANCE		意大利 ITALY	
材质类型 MATERIAL TYPE	测试项目 TESTING ITEMS	材质类型 MATERIAL TYPE	测试项目 TESTING ITEMS	材质类型 MATERIAL TYPE	测试项目 TESTING ITEMS
塑料, 硅胶, 橡胶 Plastic, Silicone and Rubber	铅和镉 Pb And Cd 多环芳香烃 PAHs 颜色迁移 Color Release	陶瓷, 玻璃 Ceramic, Glass	可溶性铝、钴、砷 Extractable Al, Co, As 杯边测试 Lip and Rim Test	塑料 Plastic	颜色迁移 Color Migration
陶瓷, 玻璃, 搪瓷 Ceramic, Glass, Enamel	可溶性钴 Extractable Cobalt 杯边测试 Lip And Rim Test	铝/铝合金 Aluminum/ Aluminum Alloy	成分分析 Composition Analysis	铝/铝合金 Aluminum/ Aluminum Alloy	金属成分分析 Metal Composition

德国 GERMANY		法国 FRANCE		意大利 ITALY	
材质类型 MATERIAL TYPE	测试项目 TESTING ITEMS	材质类型 MATERIAL TYPE	测试项目 TESTING ITEMS	材质类型 MATERIAL TYPE	测试项目 TESTING ITEMS
除了陶瓷玻璃搪瓷外的所有产品 All Except Ceramic, Glass, Enamel	感官测试－味道和气味 Sensory Test – Taste And Odor	不锈钢 Stainless Steel	成分分析 Composition Analysis	不锈钢 Stainless Steel	全面迁移测试 Overall Migration Test 镍铬锰溶出量测试 Extractable Ni, Cr&Mn
塑料 Plastic	更多的特殊迁移 More Specific Migration	硅胶 Silicone Rubber	过氧化值 Peroxide Value 有机锡以锡计 Organotin Measured As Tin	陶瓷 Ceramic	可溶性钴 Extractable Cobalt 杯边测试 Lip And Rim Test
橡胶 Rubber	甲醛特殊迁移 Extractable Formaldehyde 邻苯二甲酸盐特殊迁移 Specific Migration Of Phthalate 锌含量 Zn Content	搪瓷 Enamel	可溶性六价铬 Extractable Cr (VI) 可溶性铝、钴、砷 Extractable Al, Co, As 杯边测试 Lip And Rim Test	玻璃 Glass	全面迁移测试 Overall Migration 可溶性铅 Extractable Lead Content 杯边测试 Lip And Rim Test
木制品 Wood	总砷 Total Arsenic (As) 杀虫剂 Pesticides	橡胶 Rubber	甲醛的特殊迁移 Extractable Formaldehyde 过氧化值 Peroxide Value 挥发性有机物 VOM		
		钢 Steel	限制金属元素测试 Content of Undesirable Elements		

美国区域 USA

美国食品级法规 US FOOD GRADE: U.S. FDA CFR 21 PART 175-189 & FDA CPG 7117.05, 06, 07

美国FDA对与食品接触容器及材料的通用要求: General requirement for materials in contact with food:

厂家能够依照GMP体系(良好生产规范)运作

Factory is under GMP system

使用法规中批准的材料 (U.S. FDA CFR 21 Part 170 – 189)

Material used meet the definition of the material in corresponding sub-title (US FDA CFR 21 Part 170 – 189)

原材料应符合规范中的技术指标 (U.S. FDA CFR Part 170 – 189)

Raw material in compliance with the specification defined in sub-title (US FDA CFR Part 170-189)

任何进入市场的新材料必须经U.S. FDA审核及认可 (与欧盟新的食品级法规 2004/1935/EC相类似)

Any new material put into market must be approved by US FDA authority before (very similar to new EU Foodgrade Directive 2004/1935/EC)

U.S. FDA CFR 21 PART 175-189 :

测试标准 TESTING STANDARDS	测试项目 TESTING ITEMS
U.S. FDA CFR 21 175.300	有机涂层要求 Organic Coating Requirement
U.S. FDA CFR 21 176.170	纸制品要求 Paper And Paperboard Requirement
U.S. FDA CFR 21 178.3800	木材要求 Wood Requirement
U.S. FDA CFR 21 181.32 and 180.22	ABS塑料要求 ABS Requirement
U.S. FDA CFR 21 177.1210	食品容器的密封圈要求，如硅橡胶圈 Closure With Sealing Gaskets For Food Containers, E.G. Silicone Rubber Sealing Gasket
U.S. FDA CFR 21 177.1460	美耐皿树脂要求 Melamine Resins Requirement
U.S. FDA CFR 21 177.1500	尼龙塑料要求，如尼龙6、尼龙66、尼龙610、尼龙6/66、尼龙6/12、尼龙12T等 Nylon Requirement, E.G. Nylon6, Nylon66, Nylon610, Nylon6/66, Nylon6/12, Nylon12T, Etc.
U.S. FDA CFR 21 177.1520	PP、PE塑料要求 PP, PE Requirement
U.S. FDA CFR 21 177.1580	PC塑料要求 PC Requirement
U.S. FDA CFR 21 177.1630	PET塑料要求 PET Requirement
U.S. FDA CFR 21 177.1640	PS塑料要求 PS Requirement
U.S. FDA CFR 21 177.1655	聚枫树脂要求 Polysulfone Resin Requirement
U.S. FDA CFR 21 177.1830	苯乙烯-甲基丙烯酸甲酯共聚物要求，如MMA、MBS Styrene-Methyl Methacrylate Requirement, E.G. MMA, MBS
U.S. FDA CFR 21 177.1900	脲醛树脂要求 Urea-Formaldehyde Resin
U.S. FDA CFR 21 177.2410	酚醛树脂要求 Phenolic Resin
U.S. FDA CFR 21 177.2420	聚酯树脂要求 Polyester Resin
U.S. FDA CFR 21 177.2600	橡胶要求，如SBS、TPR等 Rubber Requirement, E.G. SBS, TPR
U.S. FDA CPG 7117.05	镀银制品要求 Silver Plated Requirement
U.S. FDA CPG 7117.06,07	玻璃、陶瓷、搪瓷食品器皿要求 Ceramic, Glass, Enamel Food Ware Requirement
ASTM C 373-88 (R2006)	陶瓷器皿的吸水率 Water Absorption, Bulk Density, Apparent Porosity, and Apparent Specific Gravity of Fired Whiteware Products
ASTM C149-86 (R2010)	玻璃容器的耐热性 Thermal Shock Resistance of Glass Containers
ASTM C554-93 (R2011)	釉陶瓷器皿热冲击测试的抗裂性 Crazing Resistance of Fired Glazed Ceramic Whitewares by a Thermal Shock Method
CMA 2012	炊具和烤具的制造标准 Engineering Standards for Cookware & Bakeware

加州65 CALIFORNIA PROPOSITION 65

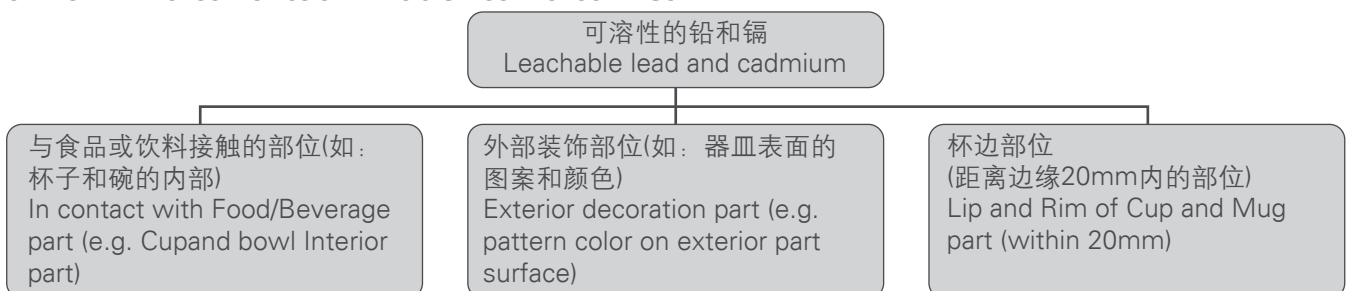
出口至加州的器皿，必须符合加州 California Proposition 65 条例要求(包括器皿与食品接触的部分、外部装饰、杯边部位)。涵盖的产品有：

The wares exported to California, they should meet California Proposition 65 requirement (including ware in contact with food part, exterior decoration, rim part of cup and mug). Covered products are:

- 用于储存、承载食品或饮料的玻璃和陶瓷制品
- 非与食品或饮料接触的玻璃和陶瓷制品（日用品）
- Food/Beverage Glass and Ceramics Products that are intended for the storage, serving or consumption of food or beverages
- Non-Food/Beverage Glass and Ceramic Products (household products)

加州65对陶瓷、玻璃制品的额外要求

CALIFORNIA PROPOSITION 65 CERAMIC & GLASS PRODUCT REQUIREMENT



澳大利亚 AUSTRALIA

澳大利亚目前没有如欧盟(EC) No.1935/2004 或美国FDA的统一法规去规管食品接触材料。
In Australia, no clear defined united regulation as EU Regulation (EC) No.1935/2004 or US FDA.

<p>塑料 PLASTICS</p>	<ul style="list-style-type: none"> • 欧盟EU 10/2011或美国FDA的测试项目均适用于澳洲AS 2070: 1999要求 Adapt either EU 10/2011 or US FDA requirement as stated in AS 2070 : 1999
<p>陶瓷、玻璃、搪瓷器皿 CERAMIC WARE, GLASS WARE, ENAMELED WARE</p>	<ul style="list-style-type: none"> • 法律法规：澳洲 No. 289, 1991 条例 (No. 90, 1956 条例修改版) Adapt Australia No. 289, 1991 (amendment of regulation No. 90, 1956) • 测试项目：可溶性铅和镉测试，依据BS 4860-1 and 2 Test: extractable lead and cadmium according to BS 4860-1 and 2
<p>金属器皿 METAL WARE</p>	<ul style="list-style-type: none"> • 法律法规：参考欧盟EU 1935/2004/EC Refer to EU 1935/2004/EC • 测试项目：可溶性重金属(银, 铝, 铜, 铬, 钴, 铁, 锰, 钼, 镍, 锡, 钒, 锌, 砷, 钡, 铍, 镉, 汞, 锂, 铅, 铈, 铊) Extractable heavy metal: 21 E (Ag, Al, Cu, Cr, Co, Fe, Mn, Mo, Ni, Sn, V, Zn, As, Ba, Be, Cd, Hg, Li, Pb, Sb, Tl)

国内市场 CHINA

测试标准 REGULATION	产品类别 TESTING SCOPE	测试标准 REGULATION	产品类别 TESTING SCOPE
GB 4806.2-2015	奶嘴 Nipple	GB/T 3532	日用瓷器 Domestic Porcelain Ware
GB 4806.3-2016	搪瓷制品 Enamel	QB/T 4162	玻璃杯 Glass Tumblers
GB 4806.4-2016	陶瓷制品 Ceramic	QB/T 4049	塑料饮水水杯 Plastic cup for drinking
GB 4806.5-2016	玻璃制品 Glass	QB/T 4624	保温容器 保温箱 Insulated Containers
GB 4806.6-2016	食品接触用塑料树脂 Food contact plastic resin	QB/T 4882	日用塑料水壶 daily plastic water canteen
		GB/T 29601	不锈钢器皿 Stainless steel ware
GB 4806.7-2016	食品接触用塑料材料及制品 Food contact plastic finished articles	GB/T 29606	不锈钢真空杯 Stainless steel vacuum flask
		GB/T 30769	不锈钢水果刀 stainless steel knife
GB 4806.8-2016	食品接触用纸和纸板材料及制品 Food contact paper & paperboard	GB/T 30230	运动水壶的安全要求 Safety requirement of sporting canteen
			GB/T 2174
GB 4806.9-2016	食品接触用金属材料及制品 Food contact metal	GB/T 15067.2	不锈钢餐具 Stainless steel cutlery
		GB/T 32388	铝及铝合金不粘锅 Aluminum and aluminum alloys nonstick cookware
GB 4806.10-2016	食品接触用涂料及涂层 Food contact coating		GB/T 32389-2015
GB 4806.11-2016	食品接触用橡胶材料及制品 Food contact rubber		

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WHEN YOU NEED TO BE SURE

