

## C23D

### ENAMELLING OF, OR APPLYING A VITREOUS LAYER TO, METALS (chemical composition of the enamels C03C)

#### Definition statement

*This subclass/group covers:*

Processes for enamelling or for applying glass layers on metal.

Enamelling is here only the coating of metals with vitreous powders in dry form, in dispersion or mixed with a polymeric binder (e.g. transfer sheets) that will disappear during burning without leaving byproducts. The heat treatment is here to melt the powder and eventually to burn the carrier, when present.

The coating of metal with glass can be done by the same processes as enamelling, by coating with molten glass.

#### Relationship between large subject matter areas

Enamel and glass compositions are classified in [C03C](#).

#### References relevant to classification in this subclass

*This subclass/group does not cover:*

Enamel compositions	<a href="#">C03C 8/00</a>
Glazes on ceramics	<a href="#">C04B 41/00</a>
Organic coatings on metal	<a href="#">C09D</a> , <a href="#">B05D</a>
Ceramic coatings on metal	<a href="#">C23C 4/00</a> , <a href="#">C23C 24/00</a> , <a href="#">C23C 26/00</a> , <a href="#">C23C 28/00</a>

#### Special rules of classification within this subclass

Inorganic coatings on metal that are formed from the decomposition of precursors should be classified in [C23C 18/00](#) and subgroups ( for example sol-gels on metal are not classified in [C23D](#)).

When the process is only characterized by the composition of one enamel layer, then it should be classified in the composition groups ([C03C 8/00](#) and subgroups).

Some documents disclose "cold enamels", these are considered as paints, and should be classified in relevant classes ([C09D](#), [B05D](#), ...).

Some documents disclose enamel on ceramics, these should be considered as glazes and not enamels, they should be classified in [C04B 41/00](#).

As silicon is not a metal (see IPC section C) no coating on silicon is classified in [C23D](#).

The invention features are classified with classes and additional information with corresponding codes.

## **C23D 1/00**

**Melting or fritting the enamels; Apparatus or furnaces therefor**

## **C23D 3/00**

**Chemical treatment of the metal surfaces prior to coating (cleaning and de-greasing of metallic objects C23G)**

### **Definition statement**

*This subclass/group covers:*

Pretreatment of metals when they are specific to enamelling.

### **References relevant to classification in this group**

*This subclass/group does not cover:*

Pretreatment of metals when they are not specific to enamelling.	<a href="#">C23C</a> , <a href="#">C23E</a> , <a href="#">C23G</a>
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## **C23D 5/00**

**Coating with enamels or vitreous layers [N: (including applying fused refractory layers C23C4/10, C23C24/10 )]**

## **C23D 5/10**

**with refractory materials**

### **References relevant to classification in this group**

*This subclass/group does not cover:*

Coating metals with ceramics	<a href="#">C23C</a>
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## **Special rules of classification within this group**

Documents should be classified in [C23C 4/10](#) and [C23C 24/10](#). No new document in this group.

### **C23D 7/00**

**Treating the coatings, e.g. drying before burning**

### **C23D 9/00**

**Ovens specially adapted for firing enamels**

## **Relationship between large subject matter areas**

Industrial oven should be classified in [F27B](#)

### **C23D 11/00**

**Continuous processes; Apparatus therefor**

### **C23D 13/00**

**After-treatment of the enamelled articles**

### **C23D 15/00**

**Joining enamelled articles to other enamelled articles by processes involving an enamelling step**

### **C23D 17/00**

**De-enamelling**