

Classification of dust

General information

Rules for temperature limitation

a) Cloud of dust

Temperature limitation due to the presence of a cloud of dust. The maximum surface temperature of the equipment must not exceed two-thirds of the ignition temperature, in degrees Celsius, of the dust/air mixture under consideration:

$$T^{\circ}_{\max} = 2/3 T_{ci}$$

- T_{ci} being the ignition temperature of a cloud of dust.

b) Layer of dust

Temperature limiting due to the presence of a layer of dust of less than 5 mm :

$$T^{\circ}_{\max} = 5 \text{ mm} - 75 \text{ K.}$$

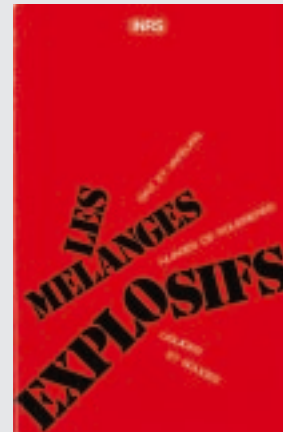
- 5 mm being the ignition temperature of a layer of dust no more than 5 mm thick.

- 75 K being the safety factor equal to + 75°C.

c) if the layer is more than 5 mm thick, the maximum permissible surface temperature should be reduced.

ATX advice

Following informations are given just as an example to explain the French rules on those subjects : please identify in your country the equivalent and remember, if there is no rule, that gaz, vapour and dust have no nationality: the way to expose or protect yourselves are the same everywhere.



INRS: Due to be reprinted

1st Week 2004.

2 Volumes:

1/ Gases, vapours

2/ dust

DUST IGNITION CHARACTERISTICS

	Average particle size	Cloud of dust		5 mm layer of dust		Maximum surface temperature
		Self-ignition T° (T1)	Maximum Surface T° of the equipment (2/3 of T1)	Self-ignition T° (T2)	Maximum Surface T° of the equipment (T2-75°C)	
Unprocessed cotton	< 75 µm			+ 520°C	+ 445°C	
Rice	< 75 µm	+ 510°C	+ 340°C	+ 450°C	+ 375°C	+ 340°C
Wheat flour	< 75 µm	+ 440°C	+ 293°C	+ 440°C	+ 365°C	+ 293°C
Dextrin	< 75 µm	+ 410°C	+ 273°C	+ 390°C	+ 315°C	+ 273°C
Starch (wheat)	< 75 µm	+ 400°C	+ 267°C	+ 380°C	+ 305°C	+ 267°C
Soya (flour)	< 75 µm	+ 550°C	+ 367°C	+ 340°C	+ 265°C	+ 265°C
Corn starch	< 75 µm	+ 380°C	+ 253°C			
Sugar	< 75 µm	+ 370°C	+ 247°C	+ 400°C	+ 325°C	+ 247°C
Cellulose	< 75 µm	+ 480°C	+ 320°C	+ 270°C	+ 195°C	+ 195°C
Wood/pine (sawdust)	< 75 µm	+ 470°C	+ 313°C	+ 260°C	+ 185°C	+ 185°C
Malt (Barley)	< 75 µm	+ 400°C	+ 267°C	+ 250°C	+ 175°C	+ 175°C
Cocoa	< 75 µm	+ 510°C	+ 340°C	+ 240°C	+ 165°C	+ 165°C
Wheat (bulk)	< 75 µm	+ 500°C	+ 333°C	+ 220°C	+ 145°C	+ 145°C
Cork	< 75 µm	+ 460°C	+ 307°C	+ 210°C	+ 135°C	+ 135°C
Peanuts (husks)	< 75 µm	+ 460°C	+ 307°C	+ 210°C	+ 135°C	+ 135°C
Milk powder	< 75 µm	+ 490°C	+ 327°C	+ 200°C	+ 125°C	+ 125°C

Important: the characteristics may vary according to the humidity and the grading size of the sample under consideration. The optimum values must therefore be taken into account when calculating the maximum surface temperature.