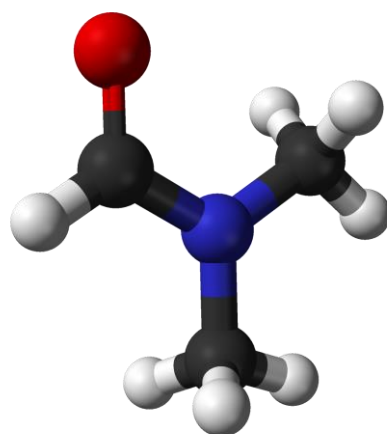


Mapa Professional explains...

Dimethylformamide (DMF or DMFa)





A few words to start...

Dimethylformamide, more commonly called DMF or DMFa, may be used as a solvent in the manufacture of polyurethane gloves. However, this product is singled out by top health authorities as presenting an inhalation and contact health hazard for operators on production lines where gloves in PU-DMF are produced. It is therefore the responsibility of glove manufacturers to ensure that operators benefit from all necessary protection measures during the production phase.

2

Why does MAPA Professional ensure its gloves contain reduced and harmless levels of DMF?



Mapa Professional Experts explain

- **What is DMF ?**

N,N-dimethylformamide (or dimethylformamide or DMF or DMFa) is a solvent used in numerous applications in the chemical industry and in the production of certain gloves coated with polyurethane (PU) and other similar products.

- **What risk does it present?**

DMF is a chemical product with low volatility. It is considered as harmful when inhaled and/or in contact with the skin. It is also irritating to the eyes and reprotoxic. The main risk is respiratory exposure by operators working in production workshops manufacturing items using DMF.

3



What does the law say?

- **Regulations on respiratory exposure**

- **In France**, article R. 4412-149 of the Labour Code sets the average occupational exposure limit value **in air** for workplaces (VME) to **5 ppm, i.e. 15 mg/m³**.
- **In Germany**, the same value was defined by the DFG (German National Research Agency).
- **In the US**, the OSHA (Occupational Safety & Health Act) and ACGIH (American Conference of Governmental Industrial Hygienists) established that the TWA (Time Weighted Average) to which workers may be exposed during a normal 8-hour working day is **10 ppm, i.e. 30 mg/m³**.

Average exposure limit in air over a working day		
Country	ppm	mg/m ³
France (VME)	5	15
Germany (MAK)	5	15
US (TWA)	10	30

- **European REACH regulations**

The European REACH regulations came into force in 2007 with the aim of protecting the manufacturing and use of chemical substances in European industry.

DMF is included in the list of candidates for inclusion in appendix XIV (also called the SVHC_Substance of Very High Concern list).

This means that MAPA Professional, as importer of PU gloves in Europe, must inform its customers if articles **contain more than 0.1% (or 1,000 ppm or 1,000 mg/kg) of DMF.**

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PU gloves from MAPA Professional, containing less than 0.1% of substances of very high concern, **comply with the REACH regulations.** This information is available in the product technical data sheets both in hardcopy and on our Internet site

Extract from a technical data sheet

LEGISLATION

This product is not classified hazardous according to the regulation (EC) n°1272/2008 of the European Parliament and of the Council. This product does not contain more than 0.1 % of substance of very high concern (SVHC) or any substance included in the annex XVII of the regulation n° 1907/2006 of the European Parliament and of the Council (REACH).

- **The regulation for gloves: standard ISO 21420**

The new standard ISO 21420, which replaces standard EN 420, is published before the end of 2019.

This standard includes an assessment of the harmlessness of the gloves and ensures there is no threat to wearers.

New standard ISO 21420 introduces a requirement regarding the maximum acceptable DMF content: it has been set to **0.1%**.

Test standard EN 16778 published in 2016 describes the method for testing the DMF content in protective gloves made from polyurethane. This is the first common method which must be used by all stakeholders.

MAPA Professional PU gloves comply with REACH regulations and future standard ISO 21420.



What about operator safety on our production lines?

The main risk of exposure to DMF involves operators working in the PU glove manufacturing workshops.

MAPA Professional gloves are produced on production lines which comply with the legislation applicable with regard to respiratory exposure of workers and concentrations in wastewater.



Key points to take away

1. When is DMF harmful for those wearing gloves?

DMF is harmful when it is in contact with the skin in **quantities greater than 0.1%**.

2. What standard do you use to ensure DMF in the gloves is not harmful?

Standard **ISO 21420 sets to 0.1%** (or 1,000 ppm or 1,000 mg/kg) the limit not to be exceeded in gloves. MAPA Professional PU gloves comply with standard ISO 21420. They cause no harm to those wearing the gloves.

3. What do the European REACH regulations say about PU?

Importers of PU gloves into Europe, must inform their customers if products contain more **than 0.1% (or 1,000 ppm) DMF**.

4. What about MAPA gloves?

MAPA Professional PU gloves comply with REACH regulations and standard ISO 21420.

For more information, visit our website www.mapa-pro.com to discover all MAPA Professional gloves. Our main two mechanical ranges are Ultrane gloves for handling and KryTech gloves for cutting protection.