

The DMF Issue

Over the last few decades there have been significant advancements in the development, manufacturing and use of synthetic industrial work gloves. The most notable step in this evolution has been the introduction of lightweight knitted/dipped gloves.

People today can choose gloves that act like a second skin providing unparalleled levels of dexterity, flexibility and ergonomics. These types of gloves have moved on from being safety products to being products that can be used to enhance the level of performance. As they are so widely accepted that also has assisted in the reduction of minor injuries leading many companies to see these as an investment to reduce related costs.

Within the lightweight assembly market, one of the largest markets for gloves, people have been using a number of alternatives, probably most notably, the use of solvent-based white polyurethane gloves.

Like other knitted and dipped gloves it is made using a hand mould which is dipped into a tank. In the instance of polyurethane and a solvent called DIMETHYL FORMAMIDE (DMF) is used to create a chemical reaction which sees the polyurethane expand to encapsulate itself around the knitted liner, usually in the palm area only. But there are issues for people using this type of glove given the inclusion of DMF.

What is the DMF issue?

There are multiple issues in the manufacturing and use of the solvent-based polyurethane gloves. The issues relate to

1. The levels of water used in the manufacturing process to try and clean as much DMF off the glove before it is packaged and exported to its final destination. To do this the solvent based polyurethane gloves are dragged through water in tanks that range anywhere between 50 to 80 meters.
2. The inhalation and contact with DMF for the people working in the factories manufacturing these solvent-based polyurethane gloves. This is both inhalation and skin contact.
3. The health effects to those who use in this type of glove. These health effects relate not only to the direct skin contact where the glove covers the hand but also to other parts of the body should DMF become absorbed into the bloodstream.

ATG regularly takes solvent-based polyurethane from the marketplace to track and monitor the levels of DMF present, which varies depending on the glove however one

thing is consistent -- DMF is always present

In practice they are all clear guidelines as to how long people should be exposed to DMF and more importantly the levels of exposure. These are more commonly referred to as occupational exposure limits or OEL's which class long-term exposure in the region of eight hours per day where exposure should not exceed 10 parts per million and short-term exposure in the region of 15 minutes per day where exposure should not exceed 20 parts per million.

Evaluations recently conducted at an accredited test house, requested by ATG, showed random samples of solvent-based polyurethane gloves taken from the market to contain 49 to +/-10,000 parts per million. At the lowest side this is 5 times the recommended occupational exposure limits and in the most extreme case nearly 600 times above the long-term occupational exposure limit.

What does DMF do to the human body?

Whilst today there is inconclusive scientific evidence to support the effect and the magnitude of DMF on humans, given that these gloves have only been used in industry for the last decade, there is a significant level of evidence suggesting that there is health issues/effects relating to the use of DMF within gloves. The general consensus relating to gloves and, in particular solvent-based polyurethane gloves which use DMF, is that the DMF can be/is absorbed through the skin. When regularly used the absorption of DMF through the skin can/will cause issues with the liver and may cause abdominal pain, nausea and vomiting, dizziness and skin problems. Research has also shown to cause reproductive and fetal effects in animals.

We at ATG feel that the consequences of wearing contaminated gloves with very high levels of DMF over a standard working shift of fairly obvious and that if you use these types of gloves that the necessary testing and safeguards are put in place to ensure that the levels of parts million within these gloves fall within the occupational exposure limits i.e. 10 ppm for eight hours and 20 ppm for 15 minutes.

What glove should I use for lightweight assembly applications?

ATG developed and market MaxiFlex as the glove for those working in assembly areas requiring decision handling. Aside from being DMF free MaxiFlex is also certified to the Oeko-Tex 100 standard which guarantees that there are no harmful chemicals used in the production of MaxiFlex or left in the MaxiFlex glove prior to skin contact and use.

In addition MaxiFlex uses the ATG patented micro-foam technology which when combines with a knitted line allows both the palm and back at the hands breath -- maximizing comfort. We refer to it as 360° breathability which is delivered through the AirTech technology platform.

To find out more visit our website at <http://www.atg-glovesolutions.com/en/intro-1.html>