



December 2011

## What's New



### Oil Palm Torn That Hurts

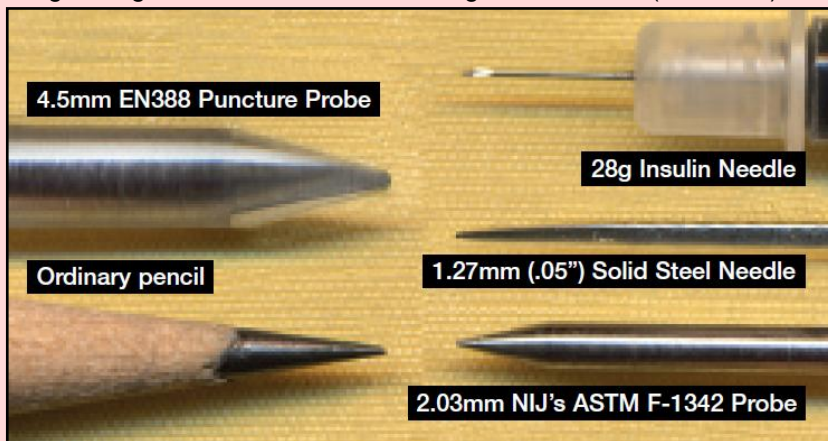
Palm oil is now the most important plantation commodity for Malaysia. However, behind the lucrative industries, there is an inherent critical hazard exists when harvesting oil palm. The fresh fruit bunches plucked from the tree need to be transported to mill on the same day for extraction; otherwise the oil quality would be compromised.

Due to the unique combination of terrain and tree height, fresh fruit bunches harvesting is done manually. The sharp torn poses puncture hazard to the harvesters. Few studies have been carried out locally, calling for improvised method or last line of defend (which is Personal Protective Equipments, PPE), but still haven't discovered any superior method as to date.

## Puncture Resistance Standards

When we mention puncture resistance in PPE industry, it means a relative indication of the ability of a material to inhibit the progression of a tear once it is been pierced.

There are two prevalent puncture resistance standard in the market. A more popular one is under European Mechanical Glove Testing Standard: EN388, 6.4. By referring to Picture 1.1, EN388 is using pen or pencil like of standard pencil probe, size approximately 4.5mm. The amount of force piecing through the fabric is indexed and given level 1~4 (Table 1.1).



Picture 1.1: Equipments used in puncture resistance testing.

Test\ Performance Level	1	2	3	4
Puncture Resistance (N)	20	60	100	150

Table 1.1: The relation between amount of force and performance level of puncture resistance.



A worker was plucking oil palm bunches.



Loading oil palm brunches onto the lorry.

In year 2005, U.S. National Institute of Justice (NIJ) implemented ASTM F1342: Standard Test Method for Protective Clothing Material, Resistance to Puncture. The standard probe used shown in Picture 1.1: size approximately 2.03mm. You could get relative size compare to ordinary pencil and 28g insulin needle.

When using EN388/ASTM test probes in puncture resistance test, they are rounded and usually tear fabric instead of cutting it as it penetrates. This rounded tip functions tend to test burst strength compare to medical needle test true needle resistance (we would call this feature as needlestick).

In reality, there is not much significant in protecting workers in actual workplace situation with needle risk, e.g. the oil palm torn, recycling centre, and biohazard waste.

An article published in the Journal of ASTM International, Vol. 5, No. 1, Paper ID JAI101364 stated:

***“It has been shown that the protection level of protective gloves measured using the current puncture-resistance standard is not relevant when dealing with medical needles.”***

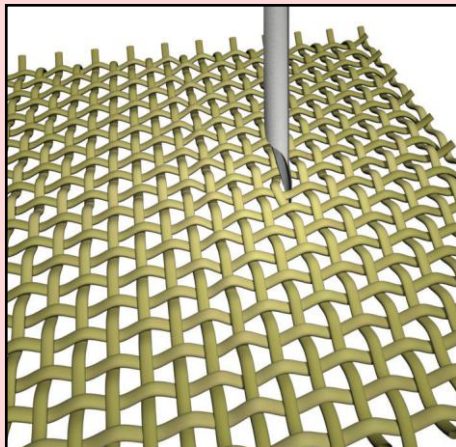
Many years ago, no material effectively protected against fine penetrators without being so thick, as it would sacrifice dexterity and comfort.

Lately, one well known notified body, SATRA, has realized the deficiency in the testing method with respect to the actual workplace hazards, and design test M18.

Various testing bodies throughout the world also have acknowledged this deficiency and are adapting standards to meet this. Two examples are the Canadian research organization IRRST and the ASTM F23 Standard committee, who are working together to design a standard that uses the same test procedures as tested herein.

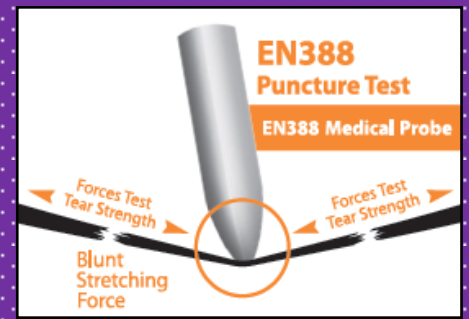
The modified ASTM F1342-05 standard for needlestick is tested using actual .25 gauge needles.

Using normal woven mechanical glove, this .25G medical needle could easily passing through the gap in between. Needles are sharp, beveled cutting instruments designed to pierce the skin.



**Picture 1.2: 25G medical needle could easily passing through the gap in between a normal woven mechanical glove.**

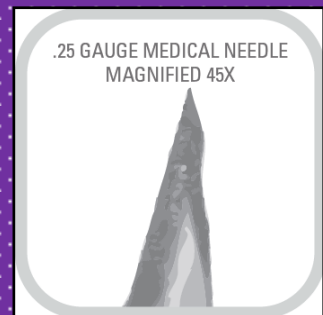
To stop the cutting/ piercing action, putting something hard and tied in front of them, for instance, the protective guard plates found in SuperFabric® brand material.



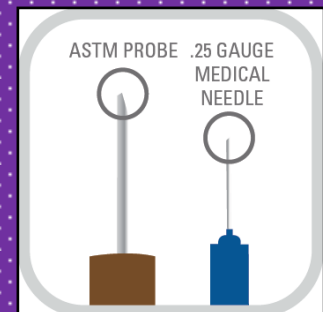
**Illustration of EN388 Puncture Test**



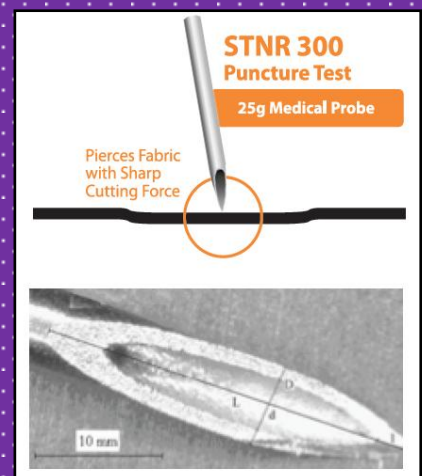
**ASTM Probe**



**.25 Gauge Medical Needle**

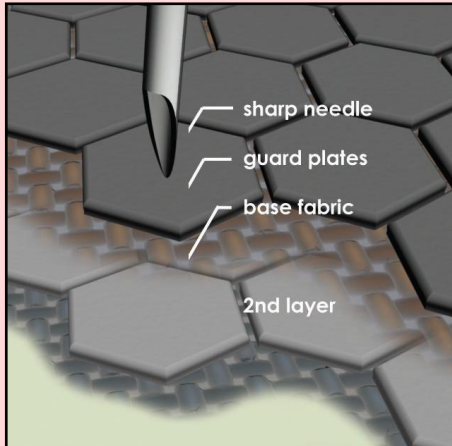


**Comparison between ASTM Probe and .25 Gauge Medical Needle**



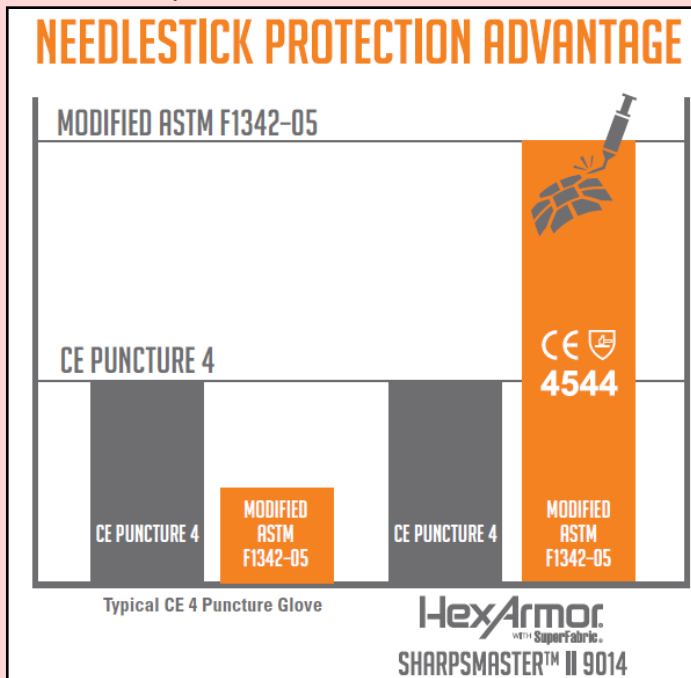
**Illustration of STNR 300 Puncture Test**

Needle-resistant products work by layering these materials over each other. Its guard plates block and deflect needle hazards, or trap and arrest them in the small gaps between guard plates. Multiple aligned layers of fabric provide extra resistance against needle hazards while maintaining acceptable dexterity in glove.



Picture 1.3: SuperFabric® guardplates block and deflect needle hazards.

These products are tested in the real world applications and are proven to reduce needlestick injuries. By using the correct test will ensure you have the right glove to protect your employees. In the example below, both gloves have CE puncture rating f 4 (maximum), but resistance to .25 gauge medical needles is very different between the two.



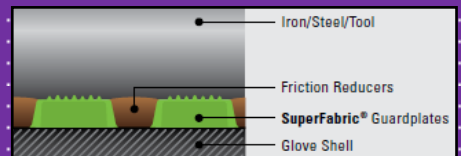
Picture 1.4: Testing result of typical CE 4 puncture glove and HexArmor SuperFabric® glove in CE Puncture 4 standard and Modified ASTM F1342-05.



HexArmor utilizes variations of SuperFabric® technologies by integrating it into its products.



HexArmor GGT5® series, 4021 GGT5 which is excellent for oil and gas industry.



SuperFabric® guardplates bite through and chanel away lubricant, enabling user to grip oily parts.



Apart from gloves, HexArmor also provides high quality sleeve with SuperFabric® feature. This is 9" Arm Guard AG10009S.



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**AM SALES & MARKETING SDN BHD** (251858-M)

**Main Office**

No. 23 & 25, Jalan PJU 5/13,  
Dataran Sunway, Kota Damansara,  
47810 Petaling Jaya, Selangor, Malaysia.  
Tel: (603)-6157 8822 Fax: (603)-6156 0748  
Email: info@amsales.com.my  
Website: www.amsales.com.my

**Melaka Branch**

No. 40C, Lorong Pasar Medan, Sin Hoe Garden, Bukit Baru, 75150 Melaka, Malaysia.  
Tel: (606)-283 6519/ 6529 Fax: (606)-283 6569  
Email: S1@amsales.com.my/ ammelaka@amsales.com.my

**Penang Branch**

No. 1-04-16, Sri Relau Kompleks, Persiaran Bukit Jambul 1, Bayan Baru, 11900 Bayan Lepas, Penang, Malaysia.  
Tel: (604)-643 9137/ 646 3917 Fax: (604)-646 3917  
Email: N1@amsales.com.my/ ampenang@amsales.com.my