



Particle Collection Efficiency Test (PCET)

High Performance Mat &
Floor Covering Review

www.dycem.com

Introduction

Our mission is to remain the world's leading manufacturer of quality contamination control floor coverings and mats. We intend to build on this by continuing to improve our products and services so that we continue to exceed our customer's expectations.

The AFG Test

The AFG has been designed and tested solely on the following Dycem de-contamination floor covering products:

- Clean Zone[CZ] for personnel
- Work Zone [WZ] for wheeled traffic

It has been designed and tested to measure the particle collection and retention efficiency of the surface of both products during their effective working life.

Over 99% of contamination being tracked into the cleanroom can be prevented when using Clean Zone & Work Zone de-contamination floor coverings.

4 key interrelated factors contribute to this effectiveness:

Size

The more footsteps or wheel rotations on Dycem or indeed any floor decontamination system the better, as particulates are held on the shoe sole or wheel in multiple layers. Therefore multiple footsteps are needed to remove each layer. We recommend a minimum of 3 footsteps with both feet i.e. 6 in total. But clearly this is a minimum - more is better and depending on the other 3 key factors below it is sometimes imperative.

Smoothness

The Dycem de-contamination surface is optically smooth when new. This creates short range electro magnetic forces known as Van De Waals forces which attract airborne particulates and help retain particulate collected.

Suppleness

The Dycem de-contamination surface is supple, allowing large and small particles to come into contact with the de-contamination surface. This then allows the collection and retention before reaching the critical area.

Support

CZ & WZ must be installed in the correct location and cleaned in the correct manner. These simple procedures will ensure the flooring remains effective and will prolong its effective working life. Failure to do this will invalidate the warranty [*please see separate installation & cleaning procedure information*].

Warranty:

Your Dycem flooring is fully guaranteed for two years providing the material is fitted by an approved flooring contractor, is cleaned in accordance with our instructions, and any damage to the material is due to faulty manufacture and not negligent misuse and abuse by your operatives.

To maximise Dycem's effective working life, there are 2 important considerations:

1. Choose the right size

Is the right size piece of Dycem being purchased in the beginning to cope with your conditions? This size depends upon a number of factors including:

- Class of cleanroom
- Number of operators
- How often wet cleaned
- Physical size available

Please contact Dycem in advance of purchasing and we will be delighted to discuss your specific needs with you.

Please remember 'size matters' the bigger the piece of Dycem the less cleaning it will need, the less wear it will get and the longer it will prevent particles from entering your critical areas.

2. Cleaning

As with all floor coverings and mats, Dycem has to be cleaned regularly to remain effective. This is even more important for Dycem as it is designed to trap particles so it is designed to get dirty quickly. This is good news for you, just think otherwise all these particles would be in your critical areas and at risk of getting into your products and processes.

The 3 sketches below highlight the interrelationship between size and cleaning.

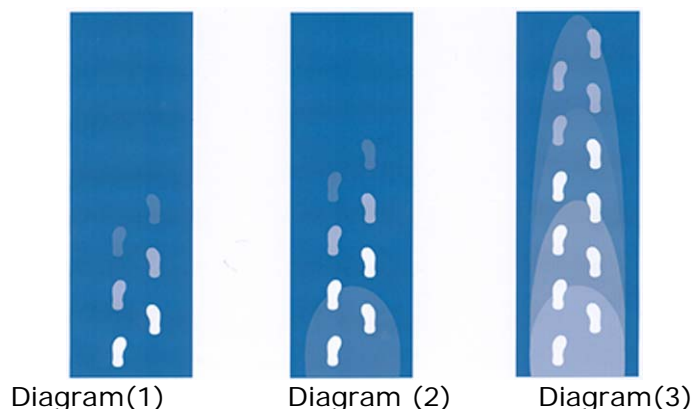
Diagram 1 shows a freshly cleaned piece of Dycem and after 3 footsteps of both feet all contamination is removed [3lin m or 10lin ft]

Diagram 2 shows the same piece of Dycem after a period of time. The lighter blue semi circle shows where the Dycem has trapped so much contamination it is in fact now taking 4 footsteps of both feet to remove all the contamination [4 lin m or 13lin ft]

Diagram 3 extends diagram 2 highlighting that where Dycem has not been cleaned it is now taking 6 footsteps of both feet to fully decontaminate the shoe sole 6 lin m or 20 lin ft].

Diagram 3 also shows that unless Dycem is cleaned shortly there is a risk of it becoming saturated and letting particles into your critical areas

Each case is slightly different, so we cannot give specifics on size needed until we know your operational circumstances, current and future plans.



The Advanced Force Gauge

The AFG, Advanced Force Gauge, is an easy-to-use, high-specification force gauge, used to measure both tension and compression forces. For added flexibility the AFG is able to recognise data from a range of external smart force and force transducers.

AFG Features



- 10 different capacities from 2.5N (9 ozf) to 2500N (550 lbf)
- Accuracy $\pm 0.1\%$ of full-scale
- Newton, lbf, kgf selectable units of measurement with full Unit conversion
- Data-output - RS232, Mitutoyo digimatic, analogue
- 1st and ultimate peak hold fast rate of 1200Hz
- Pass/fail alarms
- Overload warning (audible and visual)
- External 'Smart' force and torque transducer recognition
- Calibration certificate traceable to National Standards

The AFG measures the pull off force in Newton's of a smooth polished brass foot. Extensive testing by Dycem has shown that the higher the Newton force the higher the collection and retention of particulates.

The graph(s) and table(s) on the following page(s) show the precise relationship between the Newton force and particulate retention and collection efficiency for Clean Zone and Work Zone, Dycem's two types of decontamination floor covering. They also demonstrate the average life cycle for these floor coverings and recommend when they will need replacing.

The tensile value is the measurement of the force required to overcome the surface energy exhibited by the flooring.

NB: Work Zone has a lower Newton reading than cleanzone because it has been designed to accommodate heavy wheeled traffic. It relies upon the weight of the traffic to press the contaminants into the Dycem floor.

A brand new peel off mat is 27% effective / 73% ineffective (Dr Caroline Clibbon, Research Microbiologist, GSK). We recommend replacement at 50% effectiveness – twice as much as a brand new peel off mat.

Note: *The AFG has not been designed or tested for any other contamination control floor products i.e. not peel off mats, or any other polymeric floor coverings, we cannot guarantee any readings taken on these floors.*

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High Performance Contamination Control Mat & Floor Covering Systems - Stops contamination in its tracks

W www.dykem.com

E info@dykemusa.com or info@dykem.com

T USA 800-458-0060 UK +44 (0) 117 955 9921



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