www.armadillonv.com

Armadillo Armacel

Vibration, Shock & Acoustic Isolation

Introduction

Moulded from a high neoprene content elastomer ARMACEL pads have been engineered to give excellent isolation while offering good lateral stability. The offset design of the pad allows the elastomer to flow under load, thereby eliminating any stiffening effect with large area pads.

Pads are available in thicknesses of 8mm and each in 25, 50 and 70 durometer hardness.

Chemical Properties

Armacel Selection

It is critical that the correct grade of ARMACEL is selected for the application to ensure the highest degree of isolation.

Required:

- Total mass to be isolated.
- The disturbing frequency.
- Bearing area which comes into contact with the floor.
- The high neoprene content of ARMACEL gives excellent resistance to most common oils, solvents and steam.
- If an application is exposed to specific conditions hybrid elastomers are available on request. Please contact the Engineering department at ARMADILLO NV.

APPLICATION OF THEORY

In applications where the disturbing frequency is low the Natural Frequency of the isolator is critical. To reduce the Natural Frequency of an isolator the static deflection must be increased. Armacel pads are specifically designed to be “stacked”. Increasing the vertical height of a support bearing will increase the static deflection which in turn lowers the Natural Frequency. See later chart for indication of Natural Frequencies of multiple pads.

The offset cell design of Armacel allows for easier flow of the elastomer there by offering larger deflection with the corresponding improvement in isolation.

Imperial Example Machine weight bearing area Running Speed
15,000 lbs
6 supports at 6” square = 1296” square. 1350 RPM (22.5 Hz or cycles per second)
10,000 lbs
6 supports = 1,666 lbs per
Use Armacel 50
1,666
36 area of foot = 46.3 psi

Call +44 1274 591115 For all enquiries

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Increasing the Isolation

There are applications when either the disturbing frequency is very low or a high degree of isolation is required. In these situations Armacel has been designed so it can be stacked in multiple layers. Stacking the material gives a greater deflection and a lower natural frequency. To increase the stability of multiple stacks rigid inter leaves are added every third layer of Armacel. Multiple layer bearings are bonded together to form a completed isolation bearing. If bearings are placed directly beneath machines or channel steel work narrower than the width of the bearing, additional steel spreader plates may need to be added. To ensure bearing stability, good design practice dictates the stack height must not exceed the width of the bearing.

Natural Frequency

By increasing the number of layers of Armacel, the Natural Frequency of the isolator can be reduced (see table two).

Table One: DYNAMIC NATURAL FREQUENCY

Imperial psi					Layers of Armacel					Metric N/mm2		
25	50	100	1	2	3	6	9	12	18	25	50	100
25	50	100	29	16	13.5	9.4	7.3	5.7	27.5	0.17	0.35	0.7
20	40	80	30	17	14	9.6	7.9	8.9	23	0.14	0.28	0.55
15	30	60	32	18	15.2	10.8	8.5	6.2	18	0.1	0.21	0.41
10	20	40	16	21	17.5	12.5	10	7.2	13.2	0.07	0.14	0.28
5	10	20	39	28	22	16	12.7	8.7	8	0.03	0.07	0.14
				Load Deflection mm								

Table Two: STATIC DEFLECTION

Imperial psi					Layers of Armacel					Metric N/mm2		
25	50	100	1	2	3	6	9	12	18	25	50	100
25	50	100	29	16	13.5	9.4	7.3	5.7	5.9	0.17	0.35	0.7
20	40	80	30	17	14	9.6	7.9	8.9	5.9	0.14	0.28	0.55
15	30	60	32	18	15.2	10.8	8.5	6.2	6.2	0.1	0.21	0.41
10	20	40	16	21	17.5	12.5	10	7.2	7.2	0.07	0.14	0.28
5	10	20	39	28	22	16	12.7	8.7	8.5	0.03	0.07	0.14
				Dynamic Nf Hz.								

Pad loadings

- Armacel 25 Armacel 50 Armacel 100
- Armacel 200 Armacel 300
- Max Load 25 psi
- 50 psi 100 psi
- 200 psi 300 psi
- Max Load 0.18 N/mm 0.35 N/mm 0.70 N/mm

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