

**ABRASION RESISTANCE
OF
HERKULIT DRY SHAKE**

Report for ab lindec

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1.0 INTRODUCTION

This programme has been performed in response to a request made by ab lindec, to investigate the accelerated abrasion resistance of Herkultit dry shake applied to concrete and moisture cured with Lindolit. Three samples, measuring 400x400x55mm, were submitted for testing.

2.0 ABRASION RESISTANCE OF CONCRETE

Extensive experimental work, undertaken both in Europe (1) (2) and north America (3) (4) (5), has demonstrated that the abrasion resistance of concrete is influenced by many factors. The main influence, however, may be summarised as follows:-

- (i) Compressive Strength
- (ii) Physical Properties of the Aggregate
- (iii) Construction Procedures and Finishing
- (iv) Curing
- (v) Subsequent Surface Treatment

The role of these has been thoroughly discussed elsewhere (1), and so a similar discussion is not included in this report. Throughout this report the abrasion resistance is expressed in terms of the depth of wear produced when the surface is exposed to abrasion by Standard Rolling Wheels (6). This system, originally developed by the Cement & Concrete Association has become a widely accepted measure of abrasion resistance. Indeed, a classification has been suggested that limits values of wear depth (7,8). This original classification has been extended and now been included in the latest edition of BS 8204: part 2 :1999(9). The depth of wear is determined at the completion of 2850 revs which is approximates to 15 minutes. The original classification is given in Table 1 and the more detailed classification of abrasion resistance and limiting depths of wear for the accelerated abrasion test is provided in Table 2, clearly, the

greater the depth of wear, the lower the abrasion resistance.

3.0 ABRASION RESISTANCE TEST

One accelerated abrasion test was performed, in accordance with the requirements of BS 8204: part 2 :1999(9), on each of three samples. The test results are summarised in Table 3, with full details in the Appendix. The depth of wear found were in a close rang of 0.04 mm to 0.05 mm, with a mean depth of wear of 0.04 mm. When this depth of wear is compared with the BS 8204 : Part 2: 1999(9) classification of abrasion resistance and limiting depths of wear for the accelerated abrasion test, Table 2, it is clear that the abrasion resistance of Herkulit dry shake applied to concrete may be classified as "Special", i.e. slabs with a maximum depth of wear of 0.05 mm,subject to sever abrasion such as engineering workshops usage.

4.0 CONCLUSION

Based on the results arising from this work, the following conclusion can be presented:

(1)The abrasion resistance of Herkulit dry shake applied to concrete and moisture cured with Lindolit, may be classified as "Special", in accordance with the requirements of BS 8204: part 2 :1999(9).



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Quality of Concrete Slab	Abrasion Depth (mm)
GOOD	<0.2
NORMAL	0.2-0.40
POOR	>0.40

TABLE 1 : Classification of Concrete Floor Slabs in Medium Industrial Environment (Based on Ref. 8)

BS 8204 Class	Duty	Type of Concrete	Concrete grade N/mm ²	Minimum cement content kg/m ²	Maximum wear depth mm
Special	Severe abrasion	Special mixes and resins	Special mixes and dry-shake or sprinkle finishes, resins etc.		0.05
AR1	Very high abrasion	High strength toppings			0.1
AR2	High abrasion	Direct finish concrete	C50	400	0.2
AR3	Moderate abrasion	Direct finish concrete	C40	325	0.4

TABLE 2 : Classification of Abrasion Resistance According to BS 8204:Part 2:1999(Based on Ref. 9)

Product	TEST No	DEPTH OF WEAR (mm)	MEAN DEPTH OF WEAR (mm)
Herkulit	A	0.05	0.04
Herkulit	B	0.04	
Herkulit	C	0.04	

TABLE 3: Summary of Abrasion Test Results

5.0 REFERENCES

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