

*Floor Grain*<sup>TM</sup>

*Medium* SHP4080-1

**바닥 코팅용  
논슬립 및 소음방지  
파우더 첨가제**

*코팅수명 연장, 단순 간단 공정, 저렴한 원가*

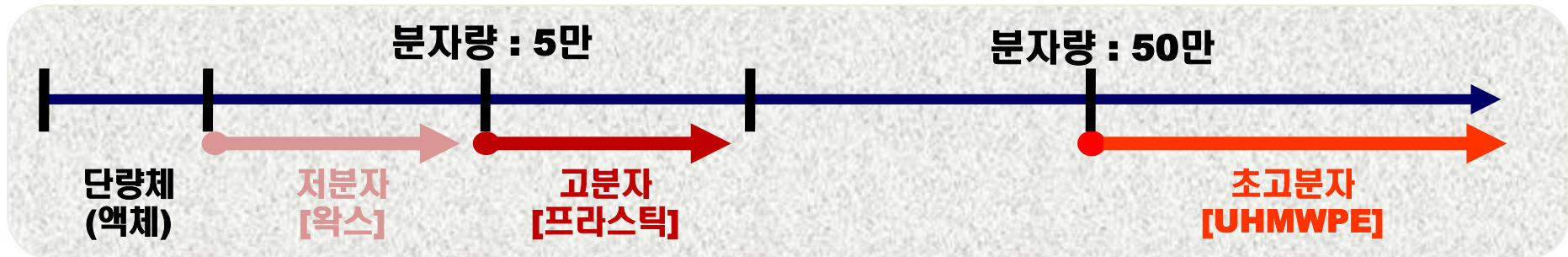


**TWO H Chem Ltd.**

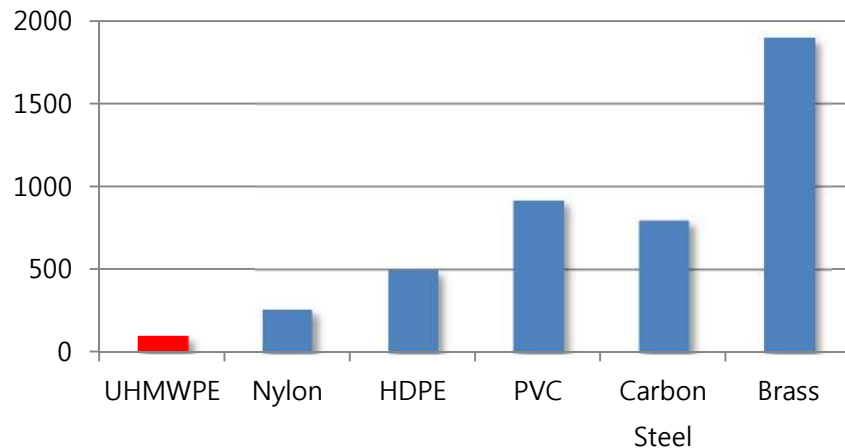
# 왜 초고분자량 수지인가?

*floor grain*<sup>TM</sup> *Medium*  
SHP4080-1

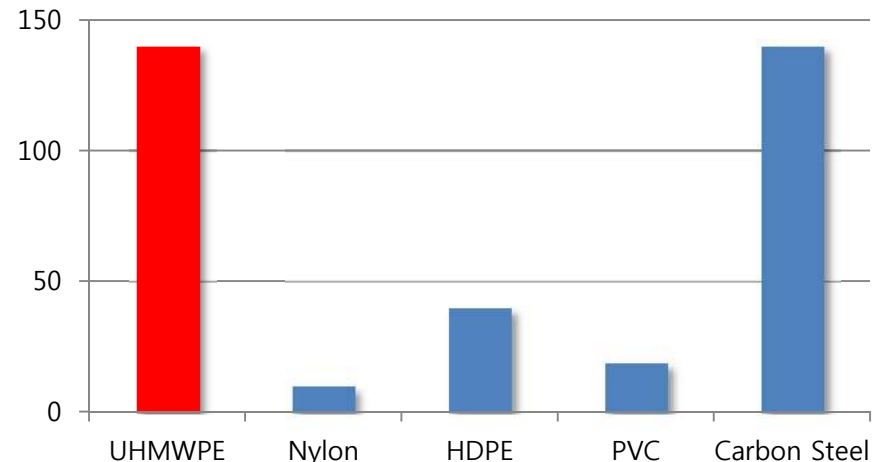
## 분자량 분포



**UHMWPE는 최고의 기계적 성능과 내화학적 성능을 가지고 있음**



내마모 성능 (Sand-slurry test)



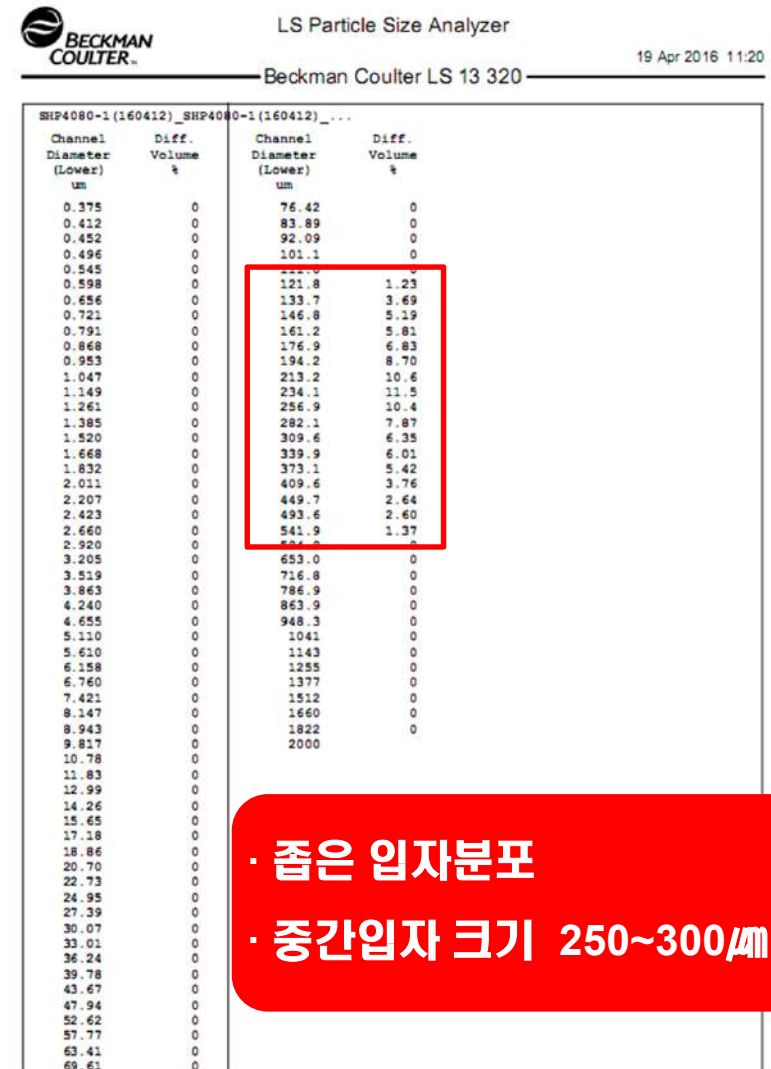
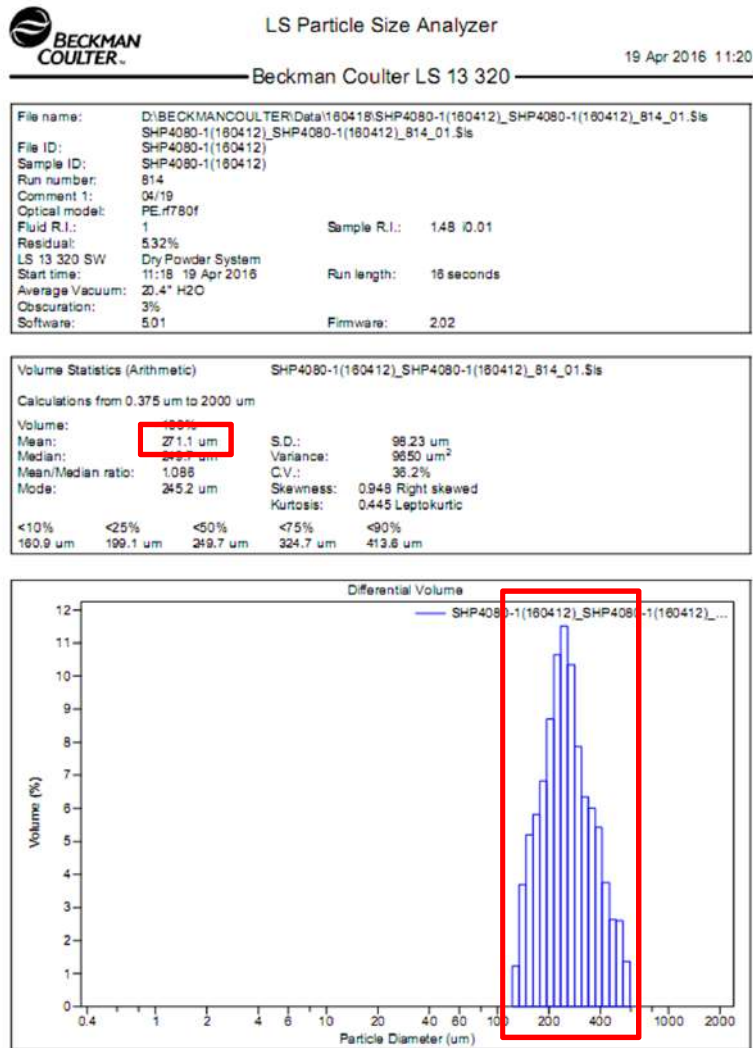
내충격 성능 (Izod test)

● **UHMWPE : Ultra High Molecular Weight Polyethylene**

# 입자 크기 및 분포

*Floor Grain™* Medium  
SHP4080-1

## 매우 균일한 입자크기



· 좁은 입자분포  
 · 중간입자 크기 250~300μm

# 유해물질 제한지침(RoHS)

Floor Grain™ Medium  
SHP4080-1

## 인체에 매우 안전하고 무해한 소재



Test Report No. F690101/LF-CTSAYAA16-24204R1

Issued Date : 2016. 04. 22

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Sample No. : AYAA16-24204R1.001  
Sample Description : SHP4080-1  
Item No./Part No. : N/A  
Materials : Plastic powder

### Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	With reference to IEC 62321-5:2013 (Determination of Cadmium by ICP-OES)	0.5	N.D.
Lead (Pb)	mg/kg	With reference to IEC 62321-5:2013 (Determination of Lead by ICP-OES)	5	N.D.
Mercury (Hg)	mg/kg	With reference to IEC 62321-4:2013 (Determination of Mercury by ICP-OES)	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	With reference to IEC 62321:2008 (Determination of Hexavalent Chromium by spot test/Colorimetric Method using UV-Vis)	1	N.D.

### Flame Retardants-PBBs/PBDEs

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	With reference to IEC 62321-6:2015 (Determination of PBBs and PBDEs by GC-MS)	5	N.D.
Dibromobiphenyl	mg/kg	With reference to IEC 62321-6:2015 (Determination of PBBs and PBDEs by GC-MS)	5	N.D.
Tribromobiphenyl	mg/kg	With reference to IEC 62321-6:2015 (Determination of PBBs and PBDEs by GC-MS)	5	N.D.
Tetrabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015 (Determination of PBBs and PBDEs by GC-MS)	5	N.D.
Pentabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015 (Determination of PBBs and PBDEs by GC-MS)	5	N.D.
Hexabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015 (Determination of PBBs and PBDEs by GC-MS)	5	N.D.
Heptabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015 (Determination of PBBs and PBDEs by GC-MS)	5	N.D.
Octabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015 (Determination of PBBs and PBDEs by GC-MS)	5	N.D.
Nonabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015 (Determination of PBBs and PBDEs by GC-MS)	5	N.D.
Decabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015 (Determination of PBBs and PBDEs by GC-MS)	5	N.D.
Monobromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015 (Determination of PBBs and PBDEs by GC-MS)	5	N.D.
Dibromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015 (Determination of PBBs and PBDEs by GC-MS)	5	N.D.
Tribromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015 (Determination of PBBs and PBDEs by GC-MS)	5	N.D.
Tetrabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015 (Determination of PBBs and PBDEs by GC-MS)	5	N.D.

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F401 Version2

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TWO H Chem Ltd.



Test Report No. F690101/LF-CTSAYAA16-24204R1

Issued Date : 2016. 04. 22

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Sample No. : AYAA16-24204R1.001  
Sample Description : SHP4080-1  
Item No./Part No. : N/A  
Materials : Plastic powder

### Flame Retardants-PBBs/PBDEs

Test Items	Unit	Test Method	MDL	Results
Pentabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015 (Determination of PBBs and PBDEs by GC-MS)	5	N.D.
Hexabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015 (Determination of PBBs and PBDEs by GC-MS)	5	N.D.
Heptabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015 (Determination of PBBs and PBDEs by GC-MS)	5	N.D.
Octabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015 (Determination of PBBs and PBDEs by GC-MS)	5	N.D.
Nonabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015 (Determination of PBBs and PBDEs by GC-MS)	5	N.D.
Decabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015 (Determination of PBBs and PBDEs by GC-MS)	5	N.D.

NOTE: (1) N.D. = Not detected. (<MDL)  
(2) mg/kg = ppm  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) Negative = Undetectable / Positive = Detectable  
(6) \*\* = Qualitative analysis (No Unit)  
(7) \* = a. The sample is positive for CrVI if CrVI concentration is greater than 0.13 ug/cm<sup>2</sup>. The sample coating is considered to contain CrVI.  
b. The sample is negative for CrVI if CrVI is n.d. (concentration less than 0.10 ug/cm<sup>2</sup>). The coating is considered a non-CrVI based coating.  
c. The result between 0.10 ug/cm<sup>2</sup> and 0.13 ug/cm<sup>2</sup> is considered to be inconclusive - unavoidable coating variations may influence the determination.

유럽 유해물질 제한지침(EU RoHS)에 적합

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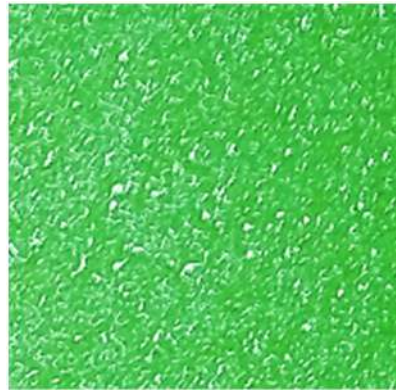
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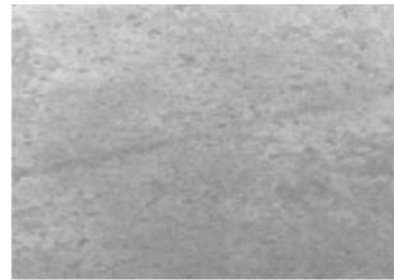
**반투명의 Clear White Color로  
페인트의 색상에 영향이 없으며 투명색상에도 사용 가능함**



유색 Epoxy and Urethane

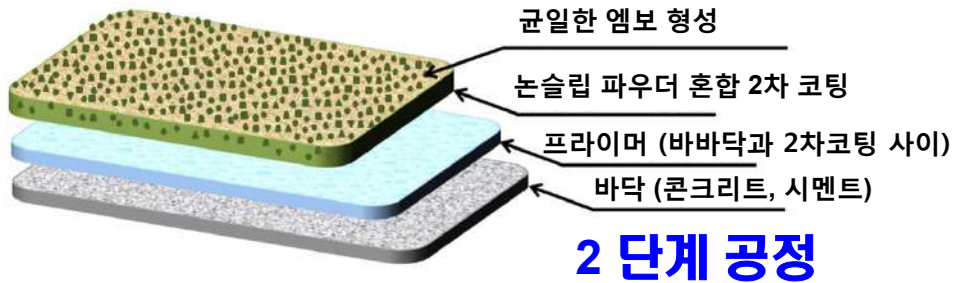


투명 Epoxy and Urethane



원 바닥 색상

## 논슬립 파우더 코팅공정



- 2. 논슬립 파우더 혼합 코팅
- 1. 프라이머 코팅

**“2 회 코팅”**  
(탑 크리어 코팅은 선택사항)

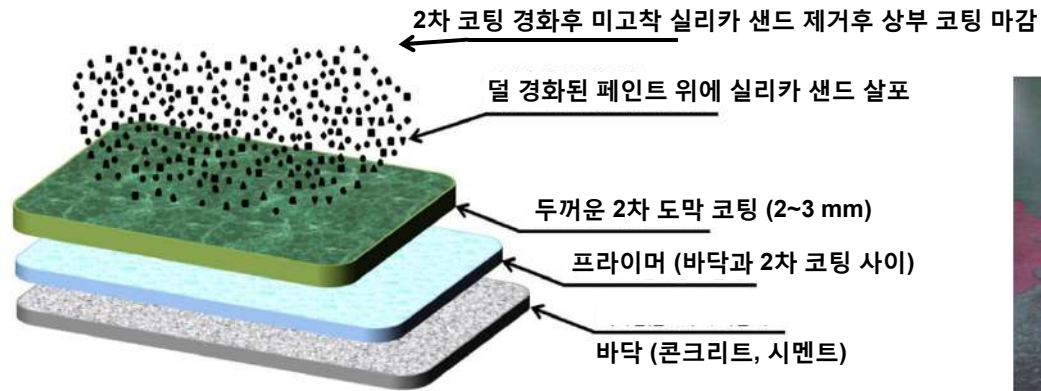
논슬립 파우더 SHP4080-1



비중 : 0.95



## 실리카 샌드 코팅공정

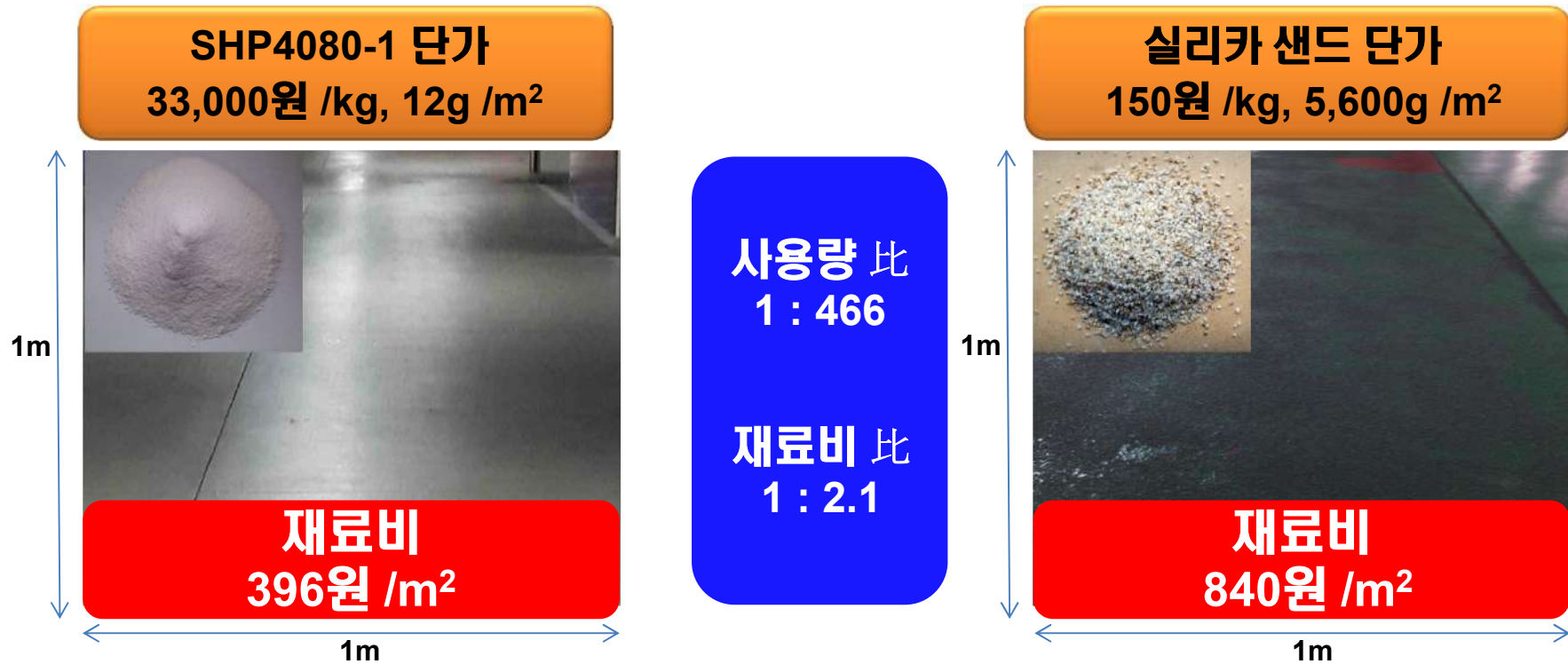


### 5 단계 공정

5. 상부 마감코팅 (필수)
4. 미고착 실리카 샌드 제거
3. 실리카 샌드 수작업 살포
2. 2~3 mm 2차 코팅
1. 프라이머 코팅



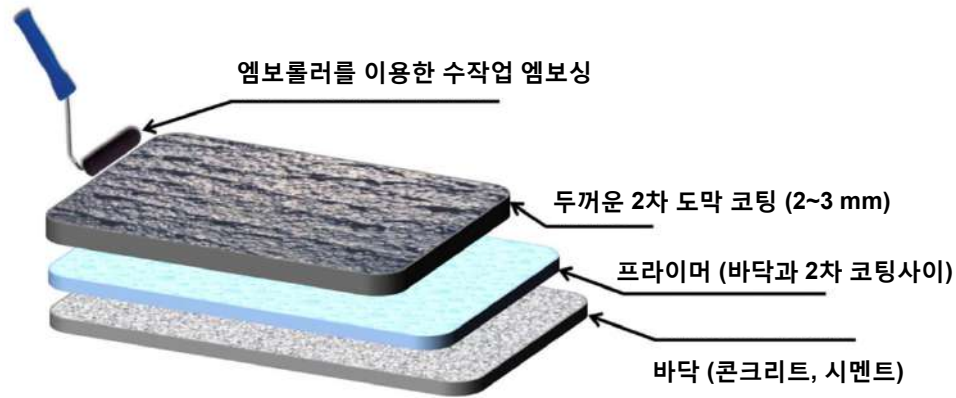
## SHP4080-1 가 실리카 샌드 보다 53% 저렴함



SHP4080-1 대 실리카 샌드  
재료비 비교



## 엠보싱 롤러 코팅공정



### 3 단계 공정

3. 엠보롤러를 이용한 수작업 엠보싱
2. 2~3 mm 2차 코팅
1. 프라이머 코팅



크고 불균일한 엠보 형성

## 코팅 방법별 총원가 비교

[단위 : 원]

비용/m <sup>2</sup>		실리카 샌드 부착 방법	에폭시 라이닝 논슬립 파우더 탑코팅	일반 에폭시 코팅	에폭시 프라이머 논슬립 파우더 탑코팅
재료비 / m <sup>2</sup>	에폭시 프라이머	600	600	600	600
	중도 코팅 (상도)	6,400 (2.0 mm )	6,400 (2.0 mm)	상도 960 (0.3 mm)	상도 960 (0.3 mm)
	상도 코팅	320 (0.1 mm)	320 (0.1 mm)	-	-
	희석제	40	40	40	40
	실리카샌드	840	-	-	-
	논슬립 파우더	-	396*	-	396*
재료비 합계 / m <sup>2</sup>		8,200	7,756	1,600	1,996
인건비 / m <sup>2</sup> (1,000m <sup>2</sup> 시공 기준)		5,000	4,000	2,000	2,000
총원가		13,200	11,756	3,600	3,996
총원가 비교 Percentage		100%	89.1%	27.3%	30.3%

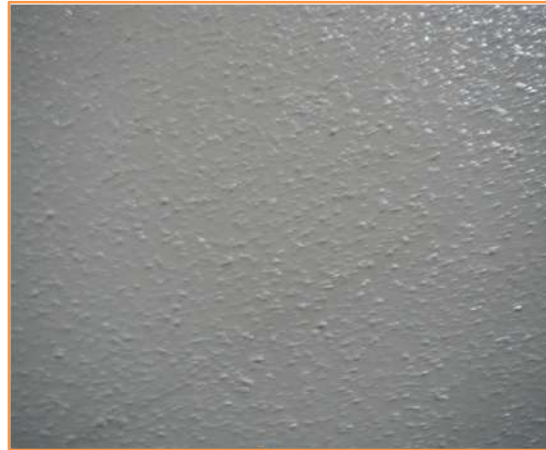
상기 자료수치는 일반적 단순 비교자료로 참고하시기 바랍니다.

★ 5% 첨가 기준  
SHP4080-1 : 33,000원 /kg

# 시공 현장 I

*Floor Grain*<sup>TM</sup> *Medium*  
SHP4080-1

청주시 성화지구 H 아파트 : 시공면적 20,000 m<sup>2</sup>, 2012년 6월 시공



## 유니버시아드 광주대회 (2015) 국제수영장의 모든 통로 및 계단



# 시공 현장 III

*Floor Grain*<sup>TM</sup> *Medium*  
SHP4080-1



**나주혁신도시  
주차전용 5층 빌딩전체**

**코팅시공면적 : 40,000m<sup>2</sup>**



# 특허 및 수상 실적

**Floor Grain™ Medium**  
SHP4080-1



**물질 및 제조 특허**  
**제 10-1438023 호**  
**미끄럼방지 바닥재**  
**및 그 제조방법**



**시공 특허**  
**제 10-1439076 호**  
**미끄럼방지 바닥재를**  
**이용한 바닥 시공 방법**



2013  
**현대건설기술대전**  
HYUNDAI E&C Technical Forum Program



**<현대건설 기술대전 은상, 2013>**



**<대한민국 우수특허 대상, 2014>**

# 제품별 첨가량 및 적용예

*Floor Grain*<sup>TM</sup> *Medium*  
SHP4080-1

제품	평균입도 분포	적용처	주재 + 경화재 대비 첨가량	탑코트 필요유무
<i>Fine</i> SHP8015-1	120~170 $\mu$ m	욕실, 맨발과 직접 접촉하는 곳	4~8 % (무게비)	필요없음
<i>Medium</i> SHP4080-1	250~300 $\mu$ m	주차장, 보행로	4~8 % (무게비)	선택사항
<i>Large</i> SHP1530-2	390~490 $\mu$ m	기름기가 있는 바닥	7~9 % (무게비)	적극권장
<i>Extra Large</i> SHP1530-1	530~630 $\mu$ m	기름기가 많은 바닥, 갑판	9~11 % (무게비)	적극권장

※ 위의 적용예는 단지 일반지침 입니다. 사용자는 간단한 테스트와 경험을 통해 자신의 적용방법 및 첨가량을 쉽게 찾을 수 있습니다.

※ 속건형, 속경화형 도료를 사용하거나, 고온 건조한 날씨 등의 속경화 환경에서는 알갱이의 뭉침 및 붓자국이 발생할 수 있으니 주의하여 사용하시기 바랍니다.

## *Floor Grain*<sup>TM</sup>

미끄럼방지, 소음저감, 코팅수명 연장, 간단한 공정, 저렴한 시공비용

유튜브 주소 :

*Floor Grain*<sup>TM</sup> 시공동영상 <https://youtu.be/9edqTGDC758>

*Floor Grain*<sup>TM</sup> 소음비교 동영상 <https://youtu.be/AIORfs0PX40>

### [주]투에이취켄

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