

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

NEW NGC, INC. dba NATIONAL GYPSUM COMPANY,

Petitioner

v.

UNITED STATES GYPSUM COMPANY,

Patent Owner

---

Case No. IPR2017-1350

Patent No. 6,342,284

**PETITION FOR *INTER PARTES* REVIEW OF  
UNITED STATES PATENT NO. 6,342,284  
PURSUANT TO 35 U.S.C. §§ 311–319, 37 C.F.R. § 42**

Mail Stop PATENT BOARD  
Patent Trial and Appeal Board  
US Patent and Trademark Office  
PO Box 1450  
Alexandria, Virginia 22313-1450

## TABLE OF CONTENTS

I.	MANDATORY NOTICES UNDER 37 C.F.R § 42.8.....	1
A.	Real Party-In-Interest under 37 C.F.R. § 42.8(b)(1).....	1
B.	Related Matters under 37 C.F.R. § 42.8(b)(2) .....	1
C.	Lead and Back-Up Counsel under 37 C.F.R. § 42.8(b)(3) .....	1
D.	Service Information.....	2
II.	GROUNDS FOR STANDING UNDER 37 C.F.R. § 42.104(a).....	2
III.	PAYMENT OF FEES .....	2
IV.	OVERVIEW OF CHALLENGES AND RELIEF REQUESTED.....	2
V.	INTRODUCTION.....	3
VI.	TECHNICAL BACKGROUND OF THE '284 PATENT.....	4
A.	Basics of Gypsum Products.....	4
B.	The '284 Patent .....	5
C.	Enhancing Materials.....	6
VII.	PROSECUTION HISTORY OF THE '284 PATENT.....	7
VIII.	CLAIM CONSTRUCTION .....	8
A.	Enhancing Material(s).....	9
B.	Host Particle(s).....	11
IX.	PRIOR ART REFERENCES .....	12
A.	Graux.....	13
B.	Satterthwaite.....	14
C.	ASTM.....	16
D.	Hjelmeland .....	17
E.	Sucech.....	18
F.	Baig.....	19
G.	Summerfield .....	19
X.	THERE IS A REASONABLE LIKELIHOOD THAT AT LEAST ONE CLAIM OF THE '284 PATENT IS UNPATENTABLE .....	20

XI.	GROUND 1: OBVIOUSNESS OF CLAIMS 1-7, 10-15, 18, 22, 26, 29, 32-34, AND 40 BASED ON GRAUX IN VIEW OF ASTM C473-95, HJELMELAND, SUCECH, BAIG, AND SUMMERFIELD.....	21
A.	Reasons for Combining Graux, ASTM C473-95, Hjelmeland, Sucech, Baig, and Summerfield.....	21
B.	Element by Element Analysis .....	26
i.	Claim 1a: A composition comprising a mixture of: .....	26
ii.	Claim 1b: a calcium sulfate material, water, a pregelatinized starch and one or more enhancing materials . . . , .....	26
iii.	Claim 1c: wherein when said composition is cast in the form of ½ inch gypsum board, said board has a sag resistance. . . ..	27
iv.	Claim 2a: A composition comprising a mixture of: .....	29
v.	Claim 2b: a calcium sulfate material, water, an aqueous foam, and one or more enhancing materials . . . , .....	29
vi.	Claim 2c: wherein when said composition is cast in the form of ½ inch gypsum board, said board has a sag resistance. . . ..	30
vii.	Claim 3: The composition of claim 2, wherein the mixture further comprises a pregelatinized starch.....	30
viii.	Claim 4a: A composition comprising set gypsum and host particles. . . ; .....	31
ix.	Claim 4b: calcium sulfate hemihydrate, at least a portion of which is in the form of crystals in and about the voids of the host particles; and one or more enhancing materials . . . , .....	32
x.	Claim 4c: wherein when said composition is cast in the form of ½ inch gypsum board, said board has a sag resistance. . . ..	33
xi.	Claim 5: Gypsum board comprising set gypsum and at least one trimetaphosphate compound, said gypsum board having a sag resistance . . . ..	34

xii.	Claim 6: The gypsum board of claim 5, wherein said set gypsum and trimetaphosphate compound are in the form of a core material sandwiched between cover sheets. ....	34
xiii.	Claim 7: The gypsum board of claim 6, wherein the cover sheets comprise paper. ....	35
xiv.	Claim 10: Gypsum board comprising set gypsum formed from at least calcined gypsum, water and at least one trimetaphosphate compound, said gypsum board having a sag resistance. . . .	35
xv.	Claim 11: The gypsum board of claim 10, wherein the amount of said trimetaphosphate compound is from about 0.004 to about 2.0% by weight of said calcined gypsum. ....	35
xvi.	Claim 12: The gypsum board of claim 10, wherein said set gypsum is in the form of a core material sandwiched between cover sheets.....	38
xvii.	Claim 13: The gypsum board of claim 12, wherein said cover sheets comprise paper. ....	38
xviii.	Claim 14: The gypsum board of claim 10, wherein said trimetaphosphate compound is selected from the group consisting of . . . .	38
xix.	Claim 15: The gypsum board of claim 10, wherein said trimetaphosphate is sodium trimetaphosphate.....	38
xx.	Claim 18: The gypsum board of claim 5, wherein said gypsum board further comprises a pregelatinized starch. ....	38
xxi.	Claim 22: The gypsum board of claim 10, wherein said gypsum board further comprises a pregelatinized starch. ....	38
xxii.	Claim 26: The gypsum board of claim 5, wherein said set gypsum has voids uniformly distributed therein. ....	39
xxiii.	Claim 29: The gypsum board of claim 10, wherein said set gypsum has voids uniformly distributed therein. ....	39
xxiv.	Claim 32: The gypsum board of claim 26, wherein the set gypsum further comprises a pregelatinized starch and at least one foaming agent.....	39
xxv.	Claim 33: The gypsum board of claim 29, wherein the set gypsum is further formed from a pregelatinized starch ....	39

...

xxvi.	Claim 34a: Gypsum board comprising an interlocking matrix of set gypsum and at least one material selected from the group consisting of,.....	40
xxvii.	Claim 34b: said gypsum board having a sag resistance . . . .	40
xxviii.	Claim 40a: A gypsum board comprising a core of material sandwiched between cover sheets. . . having been prepared by a method comprising:.....	41
xxix.	Claim 40b: forming or depositing a mixture between the cover sheets, wherein the mixture comprises a calcium sulfate material, water, and one or more enhancing materials . . . .	41
xxx.	Claim 40c: maintaining the mixture . . . , .....	41
xxxi.	Claim 40d: the enhancing material or materials having been included in the mixture in an amount such that the gypsum board has a sag resistance. . . .	42
XII.	GROUND 2: OBVIOUSNESS OF CLAIMS 1-7, 10-15, 18, 22, 26, 32-34, AND 40 BASED ON SATTERTHWAITE IN VIEW OF HJELMELAND, ASTM C473-95, SUCECH, BAIG, AND SUMMERFIELD .....	42
A.	Reasons for Combining Satterthwaite, ASTM C473-95, Hjelmeland, Sucech, Baig, and Summerfield .....	42
B.	Element by Element Analysis .....	48
i.	Claim 1a: A composition comprising a mixture of: .....	48
ii.	Claim 1b: a calcium sulfate material, water, a pregelatinized starch and one or more enhancing materials . . . , .....	48
iii.	Claim 1c: wherein when said composition is cast in the form of ½ inch gypsum board, said board has a sag resistance. . . .	50
iv.	Claim 2a: A composition comprising a mixture of: .....	52
v.	Claim 2b: a calcium sulfate material, water, an aqueous foam, and one or more enhancing materials . . . , .....	52
vi.	Claim 2c: wherein when said composition is cast in the form of ½ inch gypsum board, said board has a sag resistance. . . .	53

# Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

## Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

## Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

## Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

## API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

## LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

## FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

## E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.