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USG Corporation Attn: Pete Sahu 700 North Highway 45 Libertyville, IL 60048-1296			KHAN, TAHSEEN	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* YUFENG XU and RENEE WEINBERGER

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Appeal 2019-003052  
Application 13/335,396  
Technology Center 1700

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Before KAREN M. HASTINGS, GEORGE C. BEST, and JANE E. INGLESE, *Administrative Patent Judges*.

HASTINGS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant<sup>1</sup> appeals under 35 U.S.C. § 134 from the Examiner's rejection under 35 U.S.C. § 103(a) of claims 1, 4–16, and 21–42 as unpatentable over Tonyan (US 6,620,487 B1, issued Sept. 16, 2003).<sup>2</sup>

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<sup>1</sup> We use the word “Appellant” to refer to the “applicant” as defined in 37 C.F.R. § 1.42(a). Appellant identifies United States Gypsum Company as the real party in interest (Appeal Br. 2).

<sup>2</sup> The Examiner designated the rejection as a new ground in the Answer (Ans. 3). However, Appellant admits that they “cannot discern any material difference between the new grounds of rejection and the previous rejection” (Reply Br. 3).

We have jurisdiction over the appeal under 35 U.S.C. § 6(b).  
We AFFIRM.

#### CLAIMED SUBJECT MATTER

Claim 1 is representative and reproduced below:

1. A board comprising:  
a multi-layer core comprising (a) a first cementitious layer having a first density and a first thickness, and (b) a second cementitious layer having a second density and a second thickness; wherein the first density is higher than the second density, wherein the first cementitious layer is from about 1/8 inch to about 1/4 inch thick, and wherein the ratio of the first thickness to the second thickness is from about 1:1 to about 1:3.

Claim 26 is directed to a composite board comprising a gypsum core between two sheets of facer material with the core having the structure as set out in claim 1 (Appeal Br. Claims Appendix 26, 27).

#### OPINION

Upon consideration of the evidence of record and each of Appellant's contentions as set forth in the Appeal Brief, as well as the Reply Brief, we determine that Appellant has not demonstrated reversible error in the Examiner's rejection (e.g., *generally* Ans.). *In re Jung*, 637 F.3d 1356, 1365–66 (Fed. Cir. 2011) (explaining the Board's long-held practice of requiring Appellant to identify the alleged error in the Examiner's rejection). We sustain the rejection for the reasons expressed by the Examiner in the Final Office Action and the Answer.

We add the following primarily for emphasis.

*Claims 1, 4–6, 9–11, 13–15, 21, and 22*

It is well established that when claimed ranges overlap, or lie inside ranges of the prior art, a prima facie case of obviousness is established. *In re Peterson*, 315 F.3d 1325, 1329 (Fed. Cir. 2003) (“In cases involving overlapping ranges, we and our predecessor court have consistently held that even a slight overlap in range establishes a *prima facie* case of obviousness.”).

There is no dispute that Tonyan teaches a multi-layer cementitious or gypsum core having at least one layer with a first density higher than a second density of another layer. Appellant’s only argument is that “Tonyan does not disclose the specific thicknesses and ratios in combination” (Appeal Br. 15). However, Appellant has not adequately disputed that the claimed range of first layer thickness and the claimed range of thickness ratio of the first layer to the second layer of “about 1.1 to about 1:3” reasonably encompasses the applied prior art of Tonyan for reasons set forth by the Examiner (*generally* Ans.; Appeal Br.; Reply Br.).

Moreover, it is well settled that it would have been obvious for an artisan with ordinary skill to develop workable or even optimum ranges for result-effective parameters. *In re Woodruff*, 919 F.2d 1575, 1577, (Fed. Cir. 1990); *In re Boesch*, 617 F.2d 272, 276 (CCPA 1980); *In re Aller*, 220 F.2d 454, 456 (CCPA 1955).

“A recognition in the prior art that a property is affected by the variable is sufficient to find the variable result-effective.” *In re Applied Materials, Inc.*, 692 F.3d 1289, 1297 (Fed. Cir. 2012). As the Examiner pointed out, Tonyan discloses that thickness can have a direct impact on shear strength (col. 1, ll. 28–31; *see also* col. 1, ll. 54–60). Accordingly,

substantial evidence supports the Examiner's obviousness determination of the claimed thickness range and thickness ratio range of the recited layers. It is also noted that the claims are open-ended and do not preclude additional layers.

Appellant does not rely upon any evidence of unexpected results due to the claimed ratio range.

Accordingly, a preponderance of the evidence supports the Examiner's obviousness determination of the claimed subject matter.

We thus affirm the rejection.

*Claims 26, 31–36, and 38–42*

Appellant relies on the same argument for claim 26 as for claim 1 (Appeal Br. 14, 15). This is not persuasive of error in the Examiner's rejection for the reasons set out above.

*Claims 7, 8, 29, and 30*

Appellant argues that Tonyan does not disclose the second density of from about 25 to about 40 lbs/ft<sup>3</sup> as recited in these claims, pointing out that some examples of Tonyan disclose densities above 63 lbs/ft<sup>3</sup> (Appeal Br. 16, 17). However, it is well established that a reference is not limited to its examples or preferred embodiments.

Furthermore as pointed out by the Examiner, Tonyan is directed to making a second layer less dense than a first layer to improve nailability and cuttability, similar reasons to those of Appellant (Tonyan, *e.g.*, col. 3, l. 65–col. 4, l. 8; Spec. ¶¶ 14, 16). Tonyan thus exemplifies that density is a result effective variable as found by the Examiner (Ans. 8). Accordingly,

substantial evidence supports the Examiner's obviousness determination of the claimed densities of the various layers.

*Claim 12*

Appellant argues Tonyan does not disclose facer materials (Appeal Br. 17). Appellant however has not shown error in the Examiner's determination that it would have been obvious to provide facer material to the gypsum panel of Tonyan given the disclosures that the panel should be capable of being fastened to framing with nails or screws and that it should provide a bondable surface for exterior finishing systems (Tonyan, col. 2, ll. 12, 13, 23, 24; Ans. 9). There is no doubt that one of ordinary skill is well aware that gypsum layers are normally placed between facer materials to form drywall panels.

*Claim 27*

Appellant argues that Tonyan does not disclose a skim coat and facer material as recited in claim 27 (Appeal Br. 18). This argument is not persuasive for similar reasons as above for claim 12, and because Appellant has not shown reversible error in the Examiner's position that skim coats are well known, and/or that one of the multiple cementitious layers of Tonyan may be viewed as a skim coat (Ans. 9).

*Claims 16 and 37*

Appellant argues that Tonyan does not explicitly disclose the "weight of 1500 lb/msf or less" and ½ inch thickness of claims 16 and 37, because such a weight and thickness would result in a density of 36 lbs/ft<sup>3</sup> (Appeal Br. 19, 20). As pointed out by the Examiner, Tonyan teaches a typical ½

inch thick board may weigh 99 lbs or less (col. 10, ll. 54–58; Ans. 9). Furthermore, since Appellant has not shown reversible error in the Examiner’s position that thickness and density are known result effective variables, weight would have likewise been a related known result effective variable. As previously discussed, it is well settled that it would have been obvious for an artisan with ordinary skill to develop workable ranges for result-effective parameters. *In re Woodruff*, 919 F.2d at 1577; *In re Boesch*, 617 F.2d at 276; *In re Aller*, 220 F.2d at 456. Thus, absent any evidence of criticality of the claimed parameters, the Examiner’s obviousness determination is reasonable.

In light of these circumstances, we affirm the Examiner’s rejection of all the claims on appeal.

### CONCLUSION

In summary:

<b>Claims Rejected</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
1, 4–16, 21–42	103	Tonyan	1, 4–16, 21–42	

### TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED