

TECHNICAL SERVICE REQUEST

TSR No.: JMZ-6456-82

To: F. R. Marchetti From: J. M. Zimmermann
Market: Body Filler District: Eastern Region
Copies to: FJW, DLB Phil Baker, RWG Date Information Required: May 31, 1982
Customer/Other: Marson, Chelsea, Maine
Subject: COMPETITIVE THREAT -- VANDERBILT NYTAL200 AS Ti O₂ REPLACING TALC IN BODY FILLER.

Description of Problem and Work Requested:

- Check with J. Aveni on details on Marson. Buy some Marson body filler to get a look at their color -- %Ti O₂?
- Compare Nyal 200 to Emtal 42 in regular weight.
- Compare Nyal 200 to Emtal 4190/42 blend in light weight.
 - Dispersibility
 - Viscosity
 - Viscosity Stability
 - Sanding
 - Application Ease
 - Settling
- Look at color or mixes. Explore potential for Nyal 200 in Ti O₂ replacement vs. Emtal 42, 41, 500.

Date: May 11, 1982 Signed: J. M. Zimmermann Approved:

Date Received: 5-13-82 Charge: 106456

Copies to: GAH/ERH FJW DEG Assigned to: W. S. Stoy

Keywords:

Test Results & Comments:

See Attached

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Date Completed: 10-15-82 Hours: Notebook Ref.: 5112/1-9

File Code: 0 Signed: William C. Hall

EM-9272

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To be completed by REQUESTING DEPARTMENT.

To be completed by RESEARCH DEPARTMENT.

TSR NO. 6456

SUBJECT: COMPETITIVE THREAT - VANDERBILT NYTAL 200 AS TIO₂
REPLACING TALC IN BODY FILLER

Summary:

Nytal 200 in conventional and lightweight body fillers allows for higher talc loading than Emtal 42. Drawbacks are that body fillers increase noticeably in viscosity and change in texture from creamy to stiff within 60 days. Sanding characteristics are poorer than Emtal 42 or a blend of Emtal 42 and Emtal 4190, with a tendency to blind the sand paper in conventional and lightweight fillers.

Nytal 200 appears to be inconsistent from lot to lot. Average particle size on 4 lots range from 10.0 to 14.0 microns and +325 mesh residue ranges from 1.2% to 8.9% (Table I). However, color in Marson body filler was not critical.

Discussion:

The physical and chemical analysis of the four samples of Nytal 200 are shown in Table I. Besides some of the physical variations from lot to lot, the X-ray diffraction indicates the presence of tremolite in 3 out of the 4 talcs tested.

The conventional body fillers were prepared using 56.0% talc and 44.0% polyester resin, the Nytal 200 at this loading was about half the viscosity of the Emtal 42 control. Neither talc gave any problems in dispersing in the polyester, but due to the Nytal 200 low viscosity it settled faster than the Emtal 42. Table I shows viscosity and physical properties of the conventional body fillers. The major distinction between Emtal 42 and Nytal 200 is the poorer sanding qualities of the Nytal 200 with respect to clogging sand paper.

The lightweight body fillers compared Emtal 42 and a blend of Emtal 42/4190 (5:1 ratio) to Nytal 200 (Table 3). The higher loading of Nytal 200 initially gives a very creamy and smooth texture, but over time the texture becomes stiffer and hard to handle. Where as, both Emtal 42 and the blend maintain a more stable viscosity and more workable texture. Again, the sanding qualities of the Emtal products are better than Nytal 200 in body filler.

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Continued.....

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Conclusions:

These tests indicate that although the Nyltal 200 talc can be loaded at higher levels than Emtal 42 or talc blends in conventional and lightweight body fillers, the Emtals give a more stable, workable and sandable products. The Nyltal's lot to lot variation will also cause a problem with not maintaining a consistent formula (adding talc or polyester to adjust viscosity) and may adversely effect long term stability.

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TABLE I

Emtal 42 vs. Nytal 200

	<u>Emtal 42 Typical Properties*</u>	<u>Nytal 200 (R-1553-81A)</u>	<u>Nytal 200 (R-1644-82)</u>	<u>Nytal 200 (R-2060-82)</u>	<u>Nytal 200 (R-2065-82)</u>
G.E. Brightness, %	73.0	88.0	89.5	87.9	89.3
Average Particle Size, microns	13.5	12.1	10.0	14.0	10.5
Oil Absorption					
Spatula Rub	28.0	19.5	26.9	25.5	26.9
Gardner-Coleman	36.0	28.8	30.6	31.6	33.4
+325 Mesh Residue, %	3.7	1.39	1.2	8.6	8.9
X-Ray Diffraction Minerals Found	----	Talc Serpentine Calcite Cristobalite Tremolite	Talc Serpentine Calcite Dolomite Hornblende (Edenite)	Talc Serpentine Calcite Cummingtonite Tremolite Calcium Aluminum Oxide Hydrate	Talc Serpentine Calcite Cummingtonite Tremolite Calcium Aluminum Oxide Hydrate
Chemical Analysis					
LOI, %	20.9	6.07	----	5.97	6.24
Acid Insols, %	-----	80.87	----	81.91	81.29
MgO, %	33.2	33.97	----	31.32	31.80
SiO ₂ , %	35.3	57.35	----	56.92	57.18
Fe ₂ O ₃ , %	6.2	0.18	----	0.21	0.19
Al ₂ O ₃ , %	3.6	0.43	----	0.50	0.42
CaO, %	0.9	8.40	----	9.58	8.88
CO ₂ , %	18.0	0.79	----	0.55	0.75

*JMZ-252-78

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TABLE 2

Nytal 200 vs. Emtal 42 in Conventional Body Filler

44.0% Polylyte 32-367

Brookfield Viscosity
cps

56.0% Emtal 42

56.0% Nytal 200

RPM 0.5
 5
 10
 20

777,000
175,000
137,600
90,000

332,000
78,000
55,100
41,000

TI 0.5/20 RPM

8.6

8.1

Texture

Creamy and Smooth

Smooth but Runny

Gel Time
2% (50% BPO)

8'30"

7'30"

Sanding

Excellent

Fair (clogged
sand paper)

Featheredging

Excellent

Excellent

Application
Properties

No sag or
pinholing

Sag and no
pinholing
Viscosity too low

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TABLE 3

Nytal 200 vs. Emtal 42 and Talc Blends in Lightweight Body Filler

Brookfield Viscosity (cps)	48.9% PolyLite 32367 48.0% Emtal 42 3.1% 3M C15/250	46.0% PolyLite 32367 50.9% Nytal 200 3.1% 3M C15-250	48.4% PolyLite 32367 48.5% 5:1 Blend Emtal 42/419 3.1% 3M C15/250	
Initial RPM	0.5	678,000	1,400,000	968,000
	5	189,200	332,000	248,000
	10	140,400	211,600	168,000
	20	97,000	138,200	110,200
T.I. 0.5/20 RPM	7.0	10.1	8.8	
30 Days	0.5	750,000	1,208,000	808,000
	5	235,200	319,200	300,000
	10	164,000	213,600	206,000
	20	114,200	153,800	144,200
T.I. 0.5/20 RPM	6.6	7.9	5.6	
60 Days	0.5	960,000	1,240,000	950,000
	5	287,200	368,000	310,000
	10	204,400	262,400	220,000
	20	148,000	188,800	160,800
T.I. 0.5/20 RPM	6.5	6.6	5.9	
Texture of Compound 60 Days Old	Creamy and smooth	Stiff, difficult to stir	Creamy and smooth	
Stability at Room Temperature	No resin separation or float-out after 60 days	No resin separation or float-out after 60 days	No resin separation or float-out after 60 days	
Gel Time 2% (50% BPO)	7'30"	6'15"	7'00"	
Sanding	Very Good	Good (clogged sand- paper)	Very Good	
Feather- edging	Excellent	Excellent	Excellent	
Application Properties	No sag or pin- holding	No sag, slight pinholing, stiff	no sag or pin- holing	

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