

## Haley Griffith (adpce.ad)

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**Subject:** RE: Georgia Pacific Consumer Operations Permit 292-S3N - CQA Report Clarification Response

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**From:** Ross, Sarah M <[sarah.ross@gapac.com](mailto:sarah.ross@gapac.com)>

**Sent:** Wednesday, October 22, 2025 1:11 PM

**To:** Richard Bennett (adpce.ad) <[richard.bennett@arkansas.gov](mailto:richard.bennett@arkansas.gov)>; Bardella, Tony L <[Tony.Bardella@terracon.com](mailto:Tony.Bardella@terracon.com)>

**Cc:** McCormick, Dave C. <[Dave.McCormick@terracon.com](mailto:Dave.McCormick@terracon.com)>; Chavis, Dana M <[Dana.Chavis@GAPAC.com](mailto:Dana.Chavis@GAPAC.com)>; Johnson, Rachel M <[Rachel.JOHNSON2@GAPAC.com](mailto:Rachel.JOHNSON2@GAPAC.com)>

**Subject:** RE: Georgia Pacific Consumer Operations Permit 292-S3N - CQA Report Clarification Response

AFIN 02-00013

Permit No. 292-S3N

Attachment: GP Crossett QC Tables 3A and 4A Revised 10-21-25.pdf

RE: Item 5 in [0292-S3N\\_Additional Information for CQA Report\\_20250714.pdf](#)

ePortal Submission ID: HQ3-N1CS-02TVF

Mr. Bennett,

Attached are QC Tables 3A and 4A with the Standard OIT spec updated to include Method D8117 used in the landfill closure.

Please let us know if you have additional questions. Thank you.

Sincerely,

Sarah Ross, Environmental

GP Crossett LLC

(870) 415-6363

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**From:** Bardella, Tony L <[Tony.Bardella@terracon.com](mailto:Tony.Bardella@terracon.com)>

**Sent:** Monday, July 14, 2025 1:49 PM

**To:** Richard Bennett (adpce.ad) <[richard.bennett@arkansas.gov](mailto:richard.bennett@arkansas.gov)>

**Cc:** McCormick, Dave C. <[Dave.McCormick@terracon.com](mailto:Dave.McCormick@terracon.com)>; Ross, Sarah M <[sarah.ross@gapac.com](mailto:sarah.ross@gapac.com)>; Chavis, Dana M <[dana.chavis@gapac.com](mailto:dana.chavis@gapac.com)>; Johnson, Rachel M <[rachel.johnson2@gapac.com](mailto:rachel.johnson2@gapac.com)>

**Subject:** Georgia Pacific Consumer Operations Permit 292-S3N - CQA Report Clarification Response

Sent by an external sender

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Richard,

Please see the attached response to your questions sent on June 30 and the follow up call July 9, regarding clarifications to the Georgia-Pacific North Landfill Closure CQA Report.

Thank you,

**Tony Bardella**

Staff Engineer | Solid Waste Services



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**TABLE 3A**  
**40 mil LLDPE Textured MQC Specifications**

| Resin Manufacturer (1)                        |   |                          |                           |
|---|---|--------------------------|---------------------------|
| Test  | Method(2)   | Testing Frequency        | Min. Requirements (5)     |
| Density                                       | ASTM D 1505   | 200,000 lb and per batch | ≥ 0.915 g/cm <sup>3</sup> |
|   | ASTM 792, Meth B  |                          |                           |
| Melt Flow Index                               | ASTM D 1238<br>(190°C/2.16 kg)                              | 200,000 lb and per batch | ≤ 1.0 g / 10 min.         |
| Manufacturer's Quality Control                |   |                          |                           |
| Thickness, nominal                            | ASTM D 5994   | Each Roll                | 40 mil                    |
| Thickness, Min. ave                           | ASTM D 5994   | Each Roll                | 38 mil                    |
| Thickness, lowest indiv.<br>For 8 of 10 spec. | ASTM D 5994   | Each Roll                | 36 mil                    |
| Thickness, lowest indiv.<br>For 1 of 10 spec. | ASTM D 5994   | Each Roll                | 34 mil                    |
| Asperity Height (Min.<br>ave.) <sup>3</sup>   | GRI GM13<br>ASTM D 7466                                     | Each Roll                | 16 mil                    |
| Density                                       | ASTM D 1505   | Per 200,000 lb.          | ≤ 0.939 g/cm <sup>3</sup> |
| Carbon Black Dispersion <sup>4</sup>          | ASTM D 5596   | Per 45,000 lb            | Category 1 or 2           |
| Carbon Black Content <sup>6</sup>             | ASTM D 1603<br>ASTM D 4218                                  | Per 20,000 lb            | 2 to 3 %                  |
| Tensile Properties:                           |   |                          |                           |
| Break<br>Strength<br>Elongation               | ASTM D 6693 Type IV<br>Dumbbell, 2 ipm<br>G.L. = 2.0 inches | Per 20,000 lb            | 60 lb/in<br>250%          |
| Tear Resistance                               |   |                          | ASTM D 1004               |
| Puncture Resistance                           | ASTM D 4833   | Per 45,000 lb            | 44 lb                     |
| Oxidation Induction Time (OIT)                |   |                          |                           |
| Standard OIT                                  | GRI GM 17 /<br>ASTM D 3895 /<br>ASTM D 8117                 | 200,000 lb and per batch | 100 min                   |
| High Pressure OIT                             | ASTM D 5885   |                          | 400 min                   |
| Oven Aging @ 85 <sup>0</sup> C                |   |                          |                           |
| Standard OIT                                  | GRI GM 17 /<br>ASTM D 3895 /<br>ASTM D 8117                 | Per each formulation     | 35%                       |
| High Pressure OIT                             | ASTM D 5885   |                          | 60%                       |
| UV Resistance                                 |   |                          |                           |
| High Pressure OIT                             | ASTM D 5885   | Per each formulation     | 35%                       |

1. The polyethylene resin from which the geomembrane is made will generally be in the density range of 0.926 g/ml or lower, and have a melt index value per ASTM D1238 of less than 1.0 g/10 min. This refers to the natural, i.e., nonformulated, resin. The resin shall be virgin material with no more than 10% rework. If rework is used, it must be a similar HDPE as the parent material. No post consumer resin (PCR) of any type shall be added to the formulation.
2. Test to be performed according to the latest test method as approved by the certifying engineer.
3. Textured geomembrane shall generally have uniform texturing appearance. It shall be free from agglomerated texturing material and such defects that would affect the specified properties of the geomembrane.
4. Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
5. If 40-mil LLDPE smooth is used, it must meet GRI-GM17 standards. Use of smooth geomembrane instead of textured geomembrane must be approved by the certifying engineer.
6. Other methods such as D 4218 (muffle furnace) or microwave methods are acceptable if an appropriate correlation to D 1603 (tube furnace) can be established.

**TABLE 4A**  
**60 mil HDPE Textured MQC Specifications**

| Resin Manufacturer (1)                        |   |                          |                           |
|---|---|--------------------------|---------------------------|
| Test  | Method(2)   | Testing Frequency        | Min. Requirements (5)     |
| Density                                       | ASTM D 1505   | 200,000 lb and per batch | ≥ 0.932 g/cm <sup>3</sup> |
|   | ASTM 792, Meth B  |                          |                           |
| Melt Flow Index                               | ASTM D 1238<br>(190°C/2.16 kg)                              | 200,000 lb and per batch | ≤ 1.0 g / 10 min.         |
| Manufacturer's Quality Control                |   |                          |                           |
| Thickness, nominal                            | ASTM D 5994   | Each Roll                | 60 mil                    |
| Thickness, Min. ave                           | ASTM D 5994   | Each Roll                | 57 mil                    |
| Thickness, lowest indiv.<br>For 8 of 10 spec. | ASTM D 5994   | Each Roll                | 54 mil                    |
| Thickness, lowest indiv.<br>For 1 of 10 spec. | ASTM D 5994   | Each Roll                | 51 mil                    |
| Asperity Height (Min.<br>ave.) <sup>3</sup>   | GRI GM13<br>ASTM D 7466                                     | Each Roll                | 16 mil                    |
| Density                                       | ASTM D 1505   | Per 200,000 lb.          | ≥ 0.94 g/cm <sup>3</sup>  |
| Carbon Black Dispersion <sup>4</sup>          | ASTM D 5596   | Per 45,000 lb            | Category 1 or 2           |
| Carbon Black Content <sup>6</sup>             | ASTM D 1603<br>ASTM D 4218                                  | Per 20,000 lb            | 2 to 3 %                  |
| Tensile Properties:                           |   |                          |                           |
| Break<br>Strength<br>Elongation               | ASTM D 6693 Type IV<br>Dumbbell, 2 ipm<br>G.L. = 2.0 inches | Per 20,000 lb            | 90 lb/in<br>100%          |
| Yield<br>Strength<br>Elongation               |   |                          | 126 lb/in<br>12%          |
| Tear Resistance                               | ASTM D 1004   | Per 45,000 lb            | 42 lb                     |
| Puncture Resistance                           | ASTM D 4833   | Per 45,000 lb            | 90 lb                     |
| Oxidation Induction Time (OIT)                |   |                          |                           |
| Standard OIT                                  | GRI GM 13 /<br>ASTM D 3895 /<br>ASTM D 8117                 | 200,000 lb and per batch | 100 min                   |
| High Pressure OIT                             | ASTM D 5885   |                          | 400 min                   |
| Oven Aging @ 85°C                             |   |                          |                           |
| Standard OIT                                  | GRI GM 13 /<br>ASTM D 3895 /<br>ASTM D 8117                 | Per each formulation     | 55%                       |
| High Pressure OIT                             | ASTM D 5885   |                          | 80%                       |
| UV Resistance                                 |   |                          |                           |
| High Pressure OIT                             | ASTM D 5885   | Per each formulation     | 50%                       |

1. The resin shall be virgin material with no more than 10% rework. If rework is used, it must be a similar HDPE as the parent material. No post consumer resin (PCR) of any type shall be added to the formulation.
2. Test to be performed according to the latest test method as approved by the certifying engineer.
3. Textured geomembrane shall generally have uniform texturing appearance. It shall be free from agglomerated texturing material and such defects that would affect the specified properties of the geomembrane.
4. Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
5. If 60-mil HDPE smooth is used, it must meet GRI-GM13 standards. Use of smooth geomembrane instead of textured geomembrane must be approved by the certifying engineer.
6. Other methods such as D 4218 (muffle furnace) or microwave methods are acceptable if an appropriate correlation to D 1603 (tube furnace) can be established.