Joint Committee Issue Paper

NSF Standard(s) Impacted: NSF/ANSI-305 Personal Care

Background:

Provide a brief background statement indicating the cause and nature of concern, the impacts identified relevant to public health, public understanding, etc, and any other reason why the issue should be considered by the Committee. Reference as appropriate any specific section(s) of the standard(s) that are related to the issue.

Ogee is a beauty brand that has worked with this Standard for the last 11 years to put to market what we call Beyond Clean Beauty products. Historically our products were certified by OTCO and QAI, now only certified by QAI to harmonize the certificates.

As a beauty brand that certifies each product we create to this Standard, we believe the Standard is outdated and merits an update considering there are now multiple sources of natural, non-petroleum sources for ingredients that are deemed prohibited or otherwise excluded from the Standard. The goal of our company is to get people to use certified Organic make-up and skin care products versus conventional synthetic. We need to be allowed to use all of the best natural materials available to make the products performance competitive to synthetic alternatives currently on the market. New souces of natural materials have become available, as well as allowable processes on previously unmentioned materials and as such we propose the following sections of the standard be updated:

- Remove “Ethylhexylglycerin” from the Prohibited List
- Add Alcohol Coupling to Section I-5.2 Chemical Processes

Ethylhexylglyerin (EHS) was historically only petroleum sourced, which leads to its existence on the Prohibited List but the Indusry now has non-petroleum, natural (ISO 16128:1) sources of this material. This EHS is made via processes that are allowed in the current Standard, and its presence on the Prohibited List has created an incongruency in the Standard. We believe this Standard merits an update to this section thanks to an ingredient by Adeka: NOL EHG Eco. Based on the attached documents, this EHS is sourced from sugar cane, palm and soy, all non-GMO. This ingredient is also processed with a clean process with allowed NSF processing aids.

The Guebert Reaction also known as alcohol coupling, is a chemical reaction that converts shorter-chain alcohols into longer-chain, often branched alcohols. There are other types of alcohol coupling reactions, Guebert is the relevant one for Ethylhexylglycerin. This reaction is often used to upgrade fermentation broths to aid in the formation of higher valuable alcohols commonly used in personal care and cleaning products. The mechanism involves multiple steps, including dehydrogenation, condensation, dehydration and a final hydrogenation. Alcohol coupling is also a common precursor to Esterfication reactions, another allowable reaction per the Standard. Before Esterfication, you take the alcohols from the glycerin to combine with acid to form an ester. The alcohols from the glycerin are obtained via alcohol coupling. The Standard should allow these processes if used with approved processing aids/catalysts.

The use of EHS in personal care and cosmetics is as a preservative booster. The Standard currently allows petroleum derived preservatives to be used (Table N-1.3) but clearly states "until non-petroleum derived feedstock is commercially available". We have now come to the point where petroleum-derived preservatives are not our only option! By allowing the use of these two changes to the Standard, we can move forward with natural non-petroleum preservatives in cosmetics and personal care.

Recommendation:

Clearly state what action is needed: e.g., recommended changes to the standard(s) including the current text of the relevant section(s) indicating deletions by use of ~~strike-out~~ and additions by highlighting or underlining; e.g., reference of the issue to a Task Group for detailed consideration; etc.

It is therefore recommended to remove items from the Prohibited List as shown below by the strikeout.

Table N-1.5
Illustrative list of prohibited ingredients

ammonium lauryl sulfate	~~ethylhexylglycerin~~	polyquaternium 10
amodimethicone	glycereth-7 cocoate	propylene glycol
behentrimonium chloride	guar hydroxyproyltrimonium chloride	sodium cocoyl sarcosinate
behentrimonium methosulfate	isoceteth 20	sodium hydroxymethylglycinate
carbomer	isopropyl palmitate	sodium hydroxymethylglycinate
ceteareth-20	lauramide MEA	sodium laureth sulfate
cetrimonium chloride	lauryl DEA	sodium lauroyl sarcosinate
coco betaine	methoxycinnamate	sodium lauryl carboxylate
coco DEA	olefin sulfonate	sodium lauryl sulfoacetate
cocoamidopropyl betaine	oleyl betaine	sodium myreth sulfate
cyclopentasiloxane	parabens (methyl, propyl, butyl, etc.)	sodium PCA or Na PCA
diazolidinyl urea	PEG-150 distearate	Soyamidopropalkonium chloride
dimethicone	PEG-7 glyceryl cocoate	stearalkonium chloride
disodium cocoamphodiacetate	petroleum chemical fragrances	--
EDTA	phenoxyethanol	--

It is also recommended to add an additional subsection Informative Annex 5 under I-5.2.

I-5.2.12 Alcohol Coupling

Nonagricultural reagents	alkali (NaOH or KOH), sulfuric or phosphoric acid or other nucleophile (carboxylic acid)
Nonagricultural catalysts	Metal compounds (MgO, Tin chloride, palladium) or alkali (NaOH or KOH), sulfuric or phosphoric acid
does other process under consideration generate inputs ?	none
Agricultural inputs	Sugars, Triglyceride fats and oils
Reaction conditions	Atmospheric to 450 psi, 480°C max
Use in personal care	Produce preservative boosters, plasticizers, detergents in cosmetic products
Additional notes	none

An alcohol coupling reaction is a chemical process where two alcohol molecules are joined together to make a bigger molecule, usually with the help of a catalyst. These catalysts help speed up the reaction and can include metals like palladium (Pd) or copper (Cu), small organic molecules like proline, or even natural enzymes such as alcohol dehydrogenase. The type of catalyst used depends on whether the goal is efficiency, environmental safety, or using natural methods. The Guerbet Reaction is one type of alcohol coupling reaction but there are other types including Mitsunobu, Williamson Ether and Dehydrogenative/Ether formation. These vary in the type of simple alcohol precursor the alcohol is reacting with to form the complex molecule with high atom economy and minimal waste. Alcohol coupling reactions are central to organic synthesis, green chemistry and industrial chemistry. In personal care, it is found to be performed prior to esterification.

Supplementary Materials (photographs, diagrams, reports, etc.):
If not provided electronically, the submitter will be responsible to have sufficient copies to distribute to committee members.

- Adeka NOL EHG Eco full dossier (zip file)
- Geubert Reaction – alcohol coupling an overview

Joint Committee Issue Paper

I hereby grant NSF International the non-exclusive, royalty free rights, including non-exclusive, royalty free rights in copyright; in this item and I understand that I acquire no rights in any publication of NSF International in which this item in this or another similar or analogous form is used.

Signature*: Amy Melgar
Company: Ogee
Telephone Number: (917) 975-3462 E-mail: amy.melgar@ogee.com

Submission Date: 6-11-2025

Please submit to: Al Rose, arose@nsf.org

**Type written name will suffice as signature*

Item No. OPC-2025-01
(For NSF International internal use)
03/2013