



SPECIALIST®

The Compliance Gap in Food Processing

*A Regulatory Path Forward for Eliminating Non-
Compliant Penetrants in Food Processing
Environments*

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Executive Summary

Food processing plants face intense regulatory and audit pressure to prevent chemical contamination. Yet, anecdotal reports and documented enforcement actions suggest that non-compliant industrial penetrants may still be used in Zone 2 environments— areas where incidental contact with food is possible and where non-food-grade lubricants are prohibited. This misuse introduces avoidable contamination risks, violates U.S. Food & Drug Administration (FDA) regulations (21 CFR 178.3570), and contradicts Global Food Safety Initiative (GFSI) aligned chemical control expectations.

Modern NSF International / Nonfood Compounds Registration Program NSF H1-registered penetrants now offer performance comparable to many traditional industrial penetrants, eliminating the need for non-compliant substitutes. This white paper outlines the regulatory framework, risks associated with industrial penetrants, and the compliance-performance solution offered by WD-40 Specialist® Food-Grade Lubricant & Penetrant.¹

1. Introduction: The Persistent Compliance Gap

Despite robust chemical control programs, anecdotal reports from field engineers and maintenance audits, as well as documented enforcement actions by U.S Department of Agriculture's - USDA Food Safety and Inspection Service (FSIS) and FDA, suggest that non-compliant penetrants may continue to be used in Zone 2 and adjacent maintenance areas. These products were not designed for food environments and lack NSF registration or FDA compliance.

The most common reason cited by maintenance teams is the longstanding belief that food-grade penetrants 'don't work as well'. However, advances in H1 technology have significantly improved performance, challenging this perception.

2. Regulatory Framework: What the Standards Require

2.1 FDA 21 CFR 178.3570 (Lubricants With Incidental Food Contact)

This regulation defines the chemistry permissible for lubricants that *may* contact food accidentally. Only lubricants meeting these criteria may be used around exposed food or food-contact surfaces.

Source: [eCFR :: 21 CFR Part 178 -- Indirect Food Additives: Adjuvants, Production Aids, and Sanitizers](#)

¹ This white paper was developed in-house by WD-40 Company and reflects the company's perspective based on internal testing, regulatory analysis, and industry engagement.

Industrial penetrants often contain solvents, additives, and other substances that do not meet this regulation.

2.2 NSF Nonfood Compounds - Lubricant Classifications

NSF International categorizes lubricants used in food processing environments into three primary groups:

- **NSF 3H – Release Agents**
 - May be used on surfaces that directly contact food.
- **NSF H1 – Lubricants with Incidental Food Contact**
 - Required in **Zone 2** environments where incidental contact is possible.
- **NSF H2 – Lubricants with No Food Contact**
 - Not permitted in any area where food contamination could occur.

NSF Quick Reference Guide: <https://info.nsf.org/USDA/categories.html>

Food-Grade Lubricants and ISO 21469 Certification: <https://www.nsf.org/food-beverage/commercial-food-equipment/nonfood-compounds-chemical-registration-certification/food-grade-lubricants-iso-21469-certification>

2.3 GFSI Requirements (SQF, BRCGS, FSSC)

GFSI-benchmarked schemes require strict chemical control programs covering:

- Lubricant approval status
- Traceability
- Documented use locations
- Correct classification based on hygienic zones

SQF (Safety Quality Food) Chemical Control Guidelines: <https://www.sqfi.com/resource-center/>

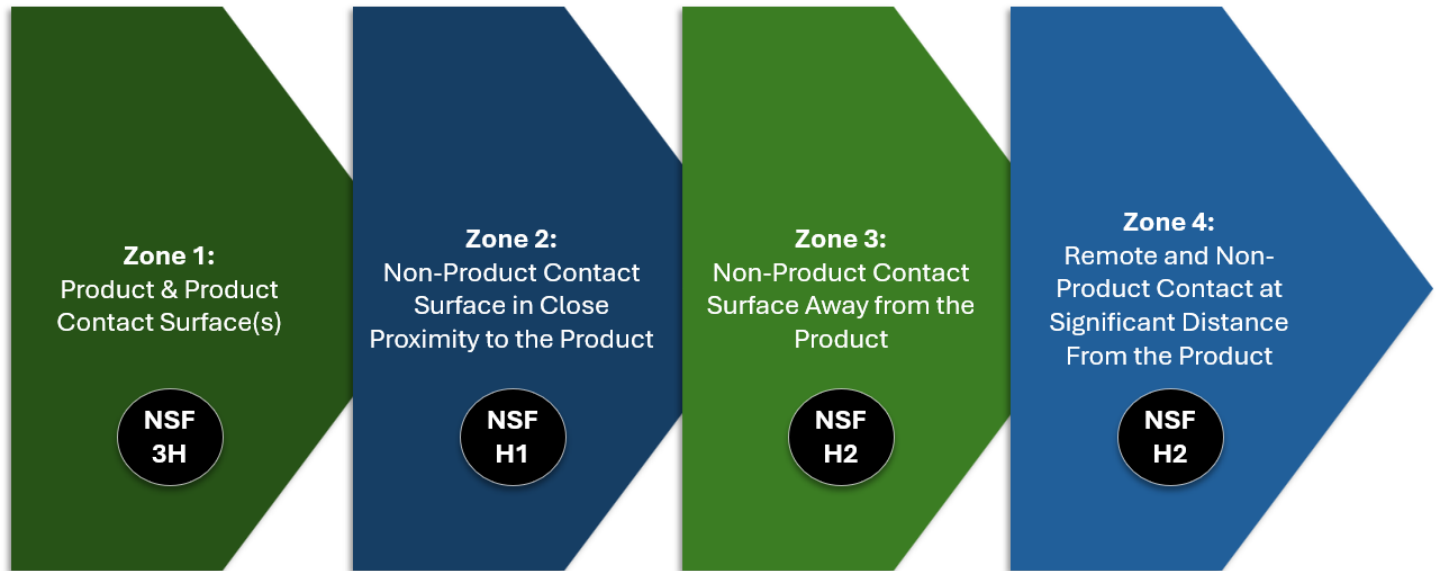
BRCGS (Brand Reputation through Compliance Global Standards) Food Safety Issue 9:

<https://www.brcgs.com/our-standards/food-safety/>

FSSC (Food System/Scheme Certification) 22000 Requirements: <https://www.fssc.com/schemes/fssc-22000/>

Using non-H1 penetrants in Zone 2 is a clear GFSI non-conformance.

3. Understanding Hygienic Zones



Zone 1 — Direct Food Contact: Surfaces that directly touch exposed food.

- **Allowed:** 3H lubricants only
- **Not Allowed:** H1, H2, industrial penetrants, non-3H aerosols

Reference: NSF 3H Classification (above)

Zone 2 — Incidental Food Contact: Areas adjacent to food where migration could occur through drip, overspray, vibration, gravity, or capillary action.

- **Allowed:** H1 lubricants and penetrants
- **Not Allowed:** H2, industrial penetrants, non-registered aerosols

Zone 3 — Non-Food Areas: Areas physically separate from food.

- **Allowed:** H2 lubricants— Best practice is to standardize on H1 wherever feasible to avoid product migration.

Zone 4 — Remote Non-Food Areas: Areas physically separate from food at significant distance away from food processing

- **Allowed:** H2 lubricants— Best practice is to standardize on H1 wherever feasible to avoid product migration.



Code of Federal Regulations

A point in time eCFR system



“Lubricants with incidental food contact may be safely used on machinery used for producing, manufacturing, packing, processing, preparing, treating, packaging, transporting, or holding food, subject to the provisions of this section:

(a) The lubricants are prepared from one or more of the following substances:

- (1) Substances generally recognized as safe for use in food.
- (2) Substances used in accordance with the provisions of a prior sanction or approval.
- (3) Substances identified in this paragraph (a)(3).

(b) The lubricants are used on food-processing equipment as a protective antirust film, as a release agent on gaskets or seals of tank closures, and as a lubricant for machine parts and equipment in locations in which there is exposure of the lubricated part to food. The amount used is the minimum required to accomplish the desired technical effect on the equipment, and the addition to food of any constituent identified in this section does not exceed the limitations prescribed.

(c) Any substance employed in the production of the lubricants described in this section that is the subject of a regulation in parts 174, 175, 176, 177, 178 and [§ 179.45 of this chapter](#) conforms with any specification in such regulation.”

Source: [eCFR :: 21 CFR 178.3570 -- Lubricants with incidental food contact.](#)

4. The Problem: Misuse of Non-Compliant Industrial Penetrants

Distributors, maintenance supervisors, and usage reports suggest that industrial penetrants—often designed for automotive or general industrial MRO—are still occasionally used in Zone 2 environments, despite regulatory restrictions. These include off-brand generics and well-known industrial penetrants, none of which are NSF H1 registered.

Why misuse happens

Technicians overwhelmingly cite one reason: **“Food-grade penetrants don’t work.”**

This may have been true in the past, but it is no longer accurate with today’s H1 penetrant technology, which has closed the historical performance gap.

5. Risks of Using Non-Compliant Penetrants in Food Facilities

- **Chemical Residue**
 - Industrial penetrants can leave residues not approved under [FDA 178.3570](#).
- **Uncontrolled Overspray**
 - Aerosolized droplets can travel several feet— especially dangerous in Zone 2.
- **Chemical Migration**
 - Chain vibration, thermal cycles, and capillary flow can move lubricants into food zones.
- **Allergen Carryover Risk**
 - Several currently available penetrants contain ingredients that may cause allergic skin reactions, as reflected by Skin Sensitization Category 1 or 1B designation contained in U.S. Safety Data Sheets (SDS).

[OSHA Hazard Communication Standard \(29 CFR 1910.1200\)](#).

[Potential Health Effects Associated with Dermal Exposure to Occupational Chemicals](#)

- **Audit Non-Conformance**
 - GFSI auditors treat incorrect lubricant classification as high-severity findings.

[SQF Audit Guidance on Chemical Control](#)

6. Modern H1 Penetrant Technology: Closing the Performance Gap

Today's H1-registered penetrants provide:

- Fast penetration into rusted or frozen threads
- High-pressure lubrication
- Operating ranges from **-100°F to 400°F**
- FDA-approved chemistry
- Compliance with NSF H1 standards

Given the availability of high-performing H1-registered penetrants, the rationale for using non-compliant penetrants in food facilities is increasingly difficult to justify.

7. WD-40 Specialist® Food-Grade Lubricant & Penetrant: A Standards-Aligned Solution

Key Compliance Advantages

- NSF H1 registered
- Meets FDA 21 CFR 178.3570 criteria
- Fully compliant with GFSI chemical control requirements
- Suitable for a wide range of common Zone 2 lubrication and penetration tasks, as defined in the product's recommended use cases

Key Performance Attributes

- Comparable penetration capability to leading non-food-grade industrial penetrants, based on internal testing
- High-pressure lubrication with extreme-load tolerance
- Wide temperature range (-100°F to 400°F)
- Suitable for harsh-process environments

i.e. WD-40 Specialist® Food Grade Lubricant & Penetrant helps eliminate the traditional compliance-performance tradeoff in food processing environments.

Product Page:

<https://www.wd40.com/products/wd-40-specialist-food-grade-lubricant-and-penetrant/>

Technical Data Sheet :

<https://www.datocms-assets.com/10845/1749062534-tds-food-grade-lubricant-and-penetrant-20250418.pdf>

Safety Data Sheet :

https://files.wd40.com/pdf/sds/wd-40-specialist-food-grade-lubricant-penetrant-fpf-sds-us-ghs.pdf?_gl=1*_muji1a*_gcl_au*MjY4NDUzMDM4LjE3NTk3NTQ0MzM.*_ga*MTg5MzM1NDI0My4xNzUxODkyMDc1*_ga_DDQGDt9LXF*czE3NjUyODUyMDgkbzYwJGcxJHQxNzY1MzE2MzYyJGo0MiRSMCRoMjE0NjM2NzUxNA

8. Summarized Compliance Implementation Strategy

a. Audit Current Lubrication Use

- a. Identify all penetrant locations in Zones 1 and 2.

b. Ensure Only NSF Compliant Penetrants in Food Processing Areas

- a. Only H1, H2, and 3H products should be accessible in food processing areas (i.e., Zones 1 and 2).

c. Replace H2 Industrial Penetrants With H1 Technology

- a. Standardize on a compliant penetrant such as WD-40 Specialist Food-Grade Lubricant & Penetrant.

d. Update Chemical Control Documentation

- a. Ensure SDS, Technical Data Sheet (TDS), NSF numbers, and approval lists are current.

e. Train Maintenance Teams

- a. Address the outdated belief that end-users have to compromise performance for compliance.

9. Conclusion

Regulations and audit frameworks require that lubricants used in Zone 2 comply with FDA 21 CFR 178.3570. NSF H1 registration provides a widely accepted assurance of this compliance.

WD-40 Specialist® Food-Grade Lubricant & Penetrant now delivers industrial-level performance with full regulatory compliance. This product offers a reliable, high-performance alternative that aligns with FDA, NSF, and GFSI standards—and closes the compliance gap for good.

Endnotes:

U.S. Food & Drug Administration (FDA).

21 CFR 178.3570 – Lubricants with incidental food contact.

Electronic Code of Federal Regulations (eCFR).

<https://www.ecfr.gov/current/title-21/chapter-I/subchapter-B/part-178/section-178.3570>

NSF International.

Nonfood Compounds Program & Food-Grade Lubricant Classifications (H1, H2, 3H).

<https://info.nsf.org/USDA/categories.html>

NSF International.

Food-Grade Lubricants and ISO 21469 Certification

<https://www.nsf.org/food-beverage/commercial-food-equipment/nonfood-compounds-chemical-registration-certification/food-grade-lubricants-iso-21469-certification>

SQF Institute (Safe Quality Food Program).

SQF Code Edition 9 & Chemical Control Guidance Materials.

<https://www.sqfi.com/resource-center/>

BRCGS (Brand Reputation Compliance Global Standards).

Food Safety Issue 9 – Requirements for Chemical and Lubricant Controls.

<https://www.brcgs.com/our-standards/food-safety/>

FSSC (Food Safety System Certification) Foundation.

FSSC 22000 Scheme Requirements.

<https://www.fssc.com/schemes/fssc-22000/>

U.S. FDA – Indirect Food Additives Overview.

Regulatory framework for indirect additives used during food processing.

<https://www.fda.gov/food/food-additives-and-gras-ingredients-information-consumers/understanding-how-fda-regulates-food-additives-and-gras-ingredients>

WD-40 Company.

WD-40 Specialist Food-Grade Lubricant & Penetrant – Official Product Page.

<https://www.wd40.com/products/wd-40-specialist-food-grade-lubricant-and-penetrant/>

WD-40 Company.

Technical Data Sheet (TDS) – WD-40 Specialist Food-Grade Lubricant & Penetrant.

<https://www.datocms-assets.com/10845/1749062534-tds-food-grade-lubricant-and-penetrant-20250418.pdf>

WD-40 Company.

Safety Data Sheet (SDS) – WD-40 Specialist Food-Grade Lubricant & Penetrant.

<https://files.wd40.com/pdf/sds/wd-40-specialist-food-grade-lubricant-penetrant-fpf-sds-us-ghs.pdf>

GFSI (Global Food Safety Initiative).

Global Markets, Compliance Frameworks & Auditor Expectations.

<https://mygfsi.com/>

NSF International.

Registration and Use of H1 Lubricants (Incidental Food Contact).

<https://www.nsf.org/certified-products-systems>

Industry Technical Commentary on Food-Grade Lubricants.

General classification references for H1, H2, and 3H categories.

<https://www.machinerylubrication.com/Read/32716/food-grade-lubricants-basics>

International Council for Machinery Lubrication

[The Ultimate Guide to Food-grade Lubricants](#)

HYFOMA | Technology | Food-Grade Lubricants | Misunderstandings

[Lubricant related incidents](#)

Manufacturing.Net

[Food Safety: The Legends of Food Grade Lubricants](#)