FAO SPECIFICATIONS
FOR PLANT PROTECTION PRODUCTS

DNOC

4,6-dinitro-o-cresol
# TABLE OF CONTENTS

DISCLAIMER ......................................................................................................................................................... 3

INTRODUCTION TO FAO SPECIFICATIONS DEVELOPED UNDER THE OLD PROCEDURE................................................................................................................................. 4

SUBMISSION OF DRAFT SPECIFICATIONS TO FAO ............................................................................................... 7

DNOC TECHNICAL .............................................................................................................................................. 8

.1 DESCRIPTION...................................................................................................................................................... 8

.2 ACTIVE INGREDIENT ........................................................................................................................................... 8

.3 IMPURITIES ........................................................................................................................................................ 9

.4 CONTAINERS..................................................................................................................................................... 9
DISCLAIMER

FAO specifications are developed with the basic objective of promoting, as far as practicable, the manufacture, distribution and use of pesticides that meet basic quality requirements.

Compliance with the specifications does not constitute an endorsement or warranty of the fitness of a particular pesticide for a particular purpose, including its suitability for the control of any given pest, or its suitability for use in a particular area. Owing to the complexity of the problems involved, the suitability of pesticides for a particular purpose and the content of the labelling instructions must be decided at the national or provincial level.

Furthermore, pesticides which are manufactured to comply with these specifications are not exempted from any safety regulation or other legal or administrative provision applicable to their manufacture, sale, transportation, storage, handling, preparation and/or use.

FAO disclaims any and all liability for any injury, death, loss, damage or other prejudice of any kind that may arise as a result of, or in connection with, the manufacture, sale, transportation, storage, handling, preparation and/or use of pesticides which are found, or are claimed, to have been manufactured to comply with these specifications.

Additionally, FAO wishes to alert users to the fact that improper storage, handling, preparation and/or use of pesticides can result in either a lowering or complete loss of safety and/or efficacy.

FAO is not responsible, and does not accept any liability, for the testing of pesticides for compliance with the specifications, nor for any methods recommended and/or used for testing compliance. As a result, FAO does not in any way warrant or represent that any pesticide claimed to comply with a FAO specification actually does so.

---

1 This disclaimer applies to all specifications published by FAO.
INTRODUCTION TO FAO SPECIFICATIONS
DEVELOPED UNDER THE OLD PROCEDURE


This manual contained detailed definitions and other essential background information on basic procedures and technical principles adopted by the group on Pesticide Specifications of the FAO Panel of Experts on Pesticide Specifications, Registration Requirements, Application Standards and Prior Informed Consent, such as:

1. Categories of Specifications (Section 3.1 of the Manual)

FAO Tentative Specifications (Code ‘S/T’, formerly ‘TS’) are those which have been recommended by FAO as preliminary specifications and which are based on minimum requirements. The methods of analysis cited are normally supplied by the manufacturer or may already have been published or be the subject of collaborative work.

FAO Provisional Specifications [Code ‘S/P’, formerly (‘S’)] are those for which more evidence of the necessary parameters is available and where some collaborative study of the methods of analysis has been carried out.

FAO (full) Specifications (Code ‘S/F’, formerly ‘S’). Specifications that have all necessary requirements together with CIPAC (full) methods, or other collaboratively studied (proven) methods.²,³

Wherever possible, standards for apparatus and common names for pesticides are those approved by the International Organization for Standardization (ISO).

2. Expression of active ingredient content (Section 4.2.5 of the Manual)

- for solids, liquid technical materials, volatile liquids (of maximum boiling point 50°C) and viscous liquids (with minimum kinematic viscosity of 1 x 10³ m²/s at 20°C) the FAO Specification shall be based on expression of the content as g/kg;
for all other liquids the active ingredient content of the product shall be declared in terms of g/kg or g/l at 20°C. If the customer requires both g/kg and g/l at 20°C, then in case of dispute the analytical results shall be calculated as g/kg.

3. Tolerance on content (Section 4.2.7 of the Manual)

A declared content of active ingredient must be included in all specifications, and one of the problems immediately arising is the level of tolerance acceptable about the nominal figure. The tolerance is influenced by (a) the reproducibility of the method of analysis, (b) the sampling error and (c) the manufacturing variance.

Allowable variations in analytical results (i.e. tolerances in content of active ingredient) with respect to specific pesticide consignments are intended to cover reasonable variations in the contents of active ingredients. For examples of such tolerances, see the table in Section 4.2.7 of the Manual.

4. Containers/packaging

FAO guidelines are in preparation.

Containers shall comply with pertinent national and international transport and safety regulations.

Technical materials, dustable powders and granules

Containers shall be suitable, clean, dry and as specified, and shall not adversely affect, or be affected by, the contents, but shall adequately protect them against external conditions.

Wettable powders

The product shall be packed in suitable, clean, dry containers as specified in the order. The container shall provide all necessary protection against compaction, atmospheric moisture, loss by vaporization and/or contamination to ensure that the product suffers no deterioration under normal transit and storage conditions.

The product shall be protected by an adequate moisture barrier. This may be a suitable bag of polyethylene or alternative means of giving equal or better protection.

Solutions and emulsifiable concentrates

Containers shall be lined, where necessary, with a suitable material, or the interior surfaces shall be treated to prevent corrosion and/or deterioration of the contents.

Additional information should be given in all specifications where particular pesticides present problems in packaging.

5. Biological information

Phytotoxicity
No test can be specified to cover the possible phytotoxicity of a formulation to all crops. When a crop is not mentioned in the instructions for use, purchasers should check with the supplier that the material is suitable, always provided that such a use is not restricted or legally forbidden.

**Wetting of crops**

The dilute spray should satisfactorily wet the leaves of the specified crops when used in accordance with the instructions. Test method MT 53.2, CIPAC F, p.162, may be useful.

---

1. Should national pesticide specifications developed from these approved FAO specifications deviate from them, the National Authority responsible for making such changes is requested to inform the FAO Plant Protection Service of the nature of, and the reasons for, the modifications.


3. Information on standard waters for laboratory evaluation of pesticidal formulations will be found in CIPAC Monograph 1, Standard Waters and an FAO Survey on Naturally Occurring Waters (1972), Black Bear Press Limited, King's Hedges Road, Cambridge CB4 2PQ, England.
SUBMISSION OF DRAFT SPECIFICATIONS TO FAO

Any organization, commercial firm or interested individual is encouraged to submit relevant specifications, or proposals for revision of existing specifications, for pesticide products for consideration and possible adoption by FAO. Correspondence should be addressed to the Pesticide Management Group, Plant Production and Protection Division, FAO, Via delle Terme di Caracalla, 00153, Rome, Italy.


Specifications which are considered suitable for further processing are assigned priorities and circulated to appropriate organizations and specialists to comment. Comments, together with other relevant information, are then reviewed in detail by the Group on Specifications of the FAO Panel of Experts on Pesticide Specifications, Registration Requirements, Application Standards and Prior Informed Consent. The drafts are converted into *FAO Provisional Specifications*, or full *FAO Specifications*. 
.1 DESCRIPTION

The material shall consist, essentially, of DNOC, together with related manufacturing impurities, as yellow crystals or flakes. The material may contain up to about 10% of water (see note 2).

.2 ACTIVE INGREDIENT

.2.1 Identity

The material shall comply with any two of the following tests:

.2.1.1 Melting Point of Anhydrous Material
(Method 19/1/M/6.2.1; CIPAC P80, p. 206, P81, p. 246)

Minimum: 84º C.

The melting point shall not be depressed by admixture with an equal quantity of pure DNOC.

.2.1.2 Melting Point Range of Nitron Complex
(Method 19/1/M/6.2.2; CIPAC P80, p. 206, P81, p. 246)

212 to 223º C.

.2.1.3 Melting Point Range of 2-Aminopyridine Complex
(Method 19/1/M/6.2.4; CIPAC P80, p. 206, P81, p. 246)

180 to 193º C.

.2.1.4 Infrared (Method 19/1/M/6.2.3; CIPAC P80, p. 206, P81, p. 246)

The spectrum produced from the sample shall not differ significantly from that produced from a standard DNOC.

.2.2 DNOC (Method 19/1/M/6.3; CIPAC P80, p. 206, P81, p. 246)

.2.2.1 Minimum

Minimum: 95% of the dry weight.
.2.2.2. **Declared Content**

The DNOC content, on a dry weight basis, shall be declared (minimum declared: 95% and, when determined, the content obtained shall not differ from that declared by more than ± 2 percentage units.

.3 **IMPURITIES**

.3.1 **Mineral Acidity** (Method 19/1/M/6.5; CIPAC P80, p. 206, P81, p. 246)

Maximum: 0.5% of the dry weight, expressed as H₂SO₄.

.3.2 **Water** (Method 19/1/M/6.6; CIPAC P80, p. 206, P81, p. 246)

The average percentage of water in the batch supplied shall be declared.

.3.3 **Solubility of Ammonium, Diethanolamine and Sodium Salts**

(Method 19/1/M/6.7; see note 1)

When the ammonium, diethanolamine and sodium salts of DNOC are prepared, the resulting solutions in CIPAC Standard Water C shall be clear with not more than 0.1% of alkali insoluble material.

.4 **CONTAINERS**

Containers shall be suitable, clean, dry and as specified in the order, and shall not adversely affect, or be affected by, the product, but shall adequately protect it from external conditions.

Containers shall comply with pertinent national and international transport and safety regulations.