

Audit - EU DK MAL Code

SIGMADUR 550 BASE APM BOOTTOP RED

	Product as is	Ready-for-use mixture
MAL Code	4-3	Not applicable.
MAL Protection	According to the regulations on work involving coded products, the following stipulations apply to the use of personal protective equipment: General: Gloves must be worn for all work that may result in soiling. Apron/coveralls/protective clothing must be worn when soiling is so great that regular work clothes do not adequately protect skin against contact with the product. A face shield must be worn in work involving spattering if a full mask is not required. In this case, other recommended use of eye protection is not required. In all spraying operations in which there is return spray, the following must be worn: respiratory protection and arm protectors/ apron/coveralls/protective clothing as appropriate or as instructed. MAL-code: 4-3 Application: When spraying in new* booths if the operator is outside the spray zone. When using scraper or knife, brush, roller, etc. for pre- and post-treatments outside a closed facility, spray booth or spray cabin. - Air-supplied half mask and eye protection must be worn. When using scraper or knife, brush, roller, etc. for pre- and post-treatments in cabins or booths of the existing* facility type, if the operator is inside the spray zone. - Air-supplied half mask, coveralls and eye protection must be worn. During downtimes, cleaning and repair of closed facilities, spray booths or cabins, if there is a risk of contact with wet paint or organic solvents. - Air-supplied full mask and coveralls must be worn. When spraying in existing* spray booths, if the operator is outside the spray zone. - Air-supplied full mask, arm protectors and apron must be worn. During non-atomizing spraying in existing* facilities of the combined-cabin, spray-cabin and spray-booth type where the operator is working inside the spray zone. - Air-supplied full mask must be worn. During all spraying where atomization occurs in cabins or spray booths where the operator is inside the spray zone and during spraying outside a closed facility, cabin or booth.	Not applicable.

- Air-supplied full mask, coveralls and hood must be worn.

Not applicable.

Drying: Items for drying/drying ovens that are temporarily placed on such things as rack trolleys, etc. must be equipped with a mechanical exhaust system to prevent fumes from wet items from passing through workers' inhalation zone.

Polishing: When polishing treated surfaces, a mask with dust filter must be worn. When machine grinding, eye protection must be worn. Work gloves must always be worn.

Caution The regulations contain other stipulations in addition to the above.

*See Regulations.

Not applicable.

Not applicable.

Low Boiling
Liquid

MAL Number

1846.0

Not applicable.

Audit (Textual)

4.3

Not applicable.

Figure-before-dash (from MAL Number) = 4
1600 < MAL Number [1846.0] ≤ 3200
MAL Number = density * Σ[Conc(i) * MAL Factor(i)] = 1.291 * 1429.9 = 1846.0
Density (from Density (g/m³) data entry) = 1.291
Σ[Conc(i) * MAL Factor(i)] = 1429.9
[XYLENES] Conc * MAL Factor = 23.74% * 46 = 1092.1
MAL Factor entered against range: '0 to 100' = 46
[N-BUTYL ACETATE] Conc * MAL Factor = 5.241% * 14 = 73.38
MAL Factor entered against range: '0 to 100' = 14
[ETHYLBENZENE] Conc * MAL Factor = 4.218% * 46 = 194.0
MAL Factor entered against range: '0 to 100' = 46
[2,6-DIMETHYLHEPTANONE] Conc * MAL Factor = 0.9301% * 47 = 43.71
MAL Factor entered against range: '0 to 100' = 47
[1-METHOXY-2-PROPYL ACETATE] Conc * MAL Factor = 0.5172% * 19 = 9.827
MAL Factor entered against range: '0 to 100' = 19
[toluene] Conc * MAL Factor = 0.1128% * 74 = 8.346
MAL Factor entered against range: '0 to 100' = 74
[Hydrocarbons, C9-C10, n-alkanes, isoalkanes, cyclics, <2% aromatics] Conc * MAL Factor = 0.0499% * 12 = 0.5988
MAL Factor entered against range: '0 to 100' = 12
[DIMETHYL GLUTARATE] Conc * MAL Factor = 0.02649% * 4 = 0.1059
MAL Factor entered against range: '0 to 100' = 4
[1-BUTANOL] Conc * MAL Factor = 0.01603% * 67 = 1.074
MAL Factor entered against range: '0 to 100' = 67
[ISOBUTYL ALCOHOL] Conc * MAL Factor = 0.0099% * 67 = 0.6633
MAL Factor entered against range: '0 to 100' = 67
[DIMETHYL SUCCINATE] Conc * MAL Factor = 0.009066% * 5 = 0.04533
MAL Factor entered against range: '0 to 100' = 5
[BENZENE] Conc * MAL Factor = 0.004206% * 880 = 3.702
MAL Factor entered against range: '0 to 100' = 880
[METHYL METHACRYLATE] Conc * MAL Factor = 0.002827% * 46 = 0.1301
MAL Factor entered against range: '0 to 100' = 46
[2-METHOXY-1-PROPYL ACETATE] Conc * MAL Factor = 0.002165% * 181 = 0.3919
MAL Factor entered against range: '0 to 100' = 181
[CUMENE] Conc * MAL Factor = 0.0015% * 1000 = 1.5
MAL Factor entered against range: '0 to 100' = 1000
[N-BUTYL METHACRYLATE] Conc * MAL Factor = 0.001344% * 16 = 0.02150
MAL Factor entered against range: '0 to 100' = 16
[ACETIC ACID] Conc * MAL Factor = 0.0005611% * 400 = 0.2244
MAL Factor entered against range: '0 to 100' = 400
[PROPYLENE GLYCOL MONOMETHYL ETHER] Conc * MAL Factor = 0.0005312% * 28 = 0.01487

MAL Factor entered against range: '0 to 100' = 28
 [METHYL ALCOHOL] Conc * MAL Factor = 0.00007926% * 54 = 0.004280
 MAL Factor entered against range: '0 to 100' = 54
 [ISOBUTYL METHACRYLATE] Conc * MAL Factor = 0.00001357% * 1000 = 0.01357
 MAL Factor entered against range: '0 to 100' = 1000
 [PROPYLENE OXIDE] Conc * MAL Factor = 0.00000149% * 8333.3 = 0.01242
 From DK (Working Environment Authority) OELs: OELs in mg/m³ and ppm available: 2 * 10000 / OEL in mg/m³ = 2 * 10000 / 2.4 = 8333.3
 Available value in mg/m³ = 2.4
 Available value in ppm = 1
 Warning: ERCF of 2 used. Contact Authorities for MAL Factor.
 [ACETALDEHYDE] Conc * MAL Factor = 0.00000019% * 1000 = 0.00019
 MAL Factor entered against range: '0 to 100' = 1000
 [HYDROCHLORIC ACID] Conc * MAL Factor = 0.00000019% * 2900 = 0.000551
 MAL Factor entered against range: '0 to 100' = 2900
 [FORMALDEHYDE] Conc * MAL Factor = 0.00000014% * 2500 = 0.00035
 MAL Factor entered against range: '0 to 0.1' = 2500
 [ETHYLENE OXIDE] Conc * MAL Factor = 0.00000014% * 11111.1 = 0.001556
 From DK (Working Environment Authority) OELs: OELs in mg/m³ and ppm available: 2 * 10000 / OEL in mg/m³ = 2 * 10000 / 1.8 = 11111.1
 Available value in mg/m³ = 1.8
 Available value in ppm = 1
 Warning: ERCF of 2 used. Contact Authorities for MAL Factor.
 [1,4-DIOXANE] Conc * MAL Factor = 0.00000008% * 390 = 0.0000312
 MAL Factor entered against range: '0 to 100' = 390
 [METHYL CHLORIDE] Conc * MAL Factor = 0.00000008% * 476.2 = 0.00003810
 From DK (Working Environment Authority) OELs: OELs in mg/m³ and ppm available: 2 * 10000 / OEL in mg/m³ = 2 * 10000 / 42 = 476.2
 Available value in mg/m³ = 42
 Available value in ppm = 20
 Warning: ERCF of 2 used. Contact Authorities for MAL Factor.
 Ingredients with MAL factor of 0 [did not contribute] {Denmark MAL Code}
 BARIUM SULFATE (26.98%)
 MAL Factor entered against range: '0 to 100' = 0
 hydroxy acrylic resin (26.58%)
 Default assumption [non-volatile] = 0
 Talc, non-asbestos form (4.375%)
 MAL Factor entered against range: '0 to 100' = 0
 C.I. PIGMENT RED 170 (3.491%)
 MAL Factor entered against range: '0 to 100' = 0
 CHLORITE-GROUP MINERALS (0.8095%)
 MAL Factor entered against range: '0 to 100' = 0
 12-hydroxyoctadecanoic acid, reaction products with 1,3-benzenedimethanamine and hexamethylenediamine (0.651%)
 From US (ACGIH) OELs: Product is assumed to be non-volatile, due to an OEL in mg/m³ being available, and no ppm OEL being available] = 0
 Available value in mg/m³ = 3
 TITANIUM DIOXIDE (0.5200%)
 MAL Factor entered against range: '0 to 100' = 0
 acrylic copolymer (0.3167%)
 Default assumption [non-volatile] = 0
 QUARTZ (<10 microns) (0.3103%)
 MAL Factor entered against range: '0 to 100' = 0
 Reaction mass of Bis(1,2,2,6,6-pentamethyl-4-piperidyl) sebacate and Methyl 1,2,2,6,6-pentamethyl-4-piperidyl sebacate (0.3%)
 Default assumption [non-volatile] = 0
 modified polyurethane (0.18%)
 Default assumption [non-volatile] = 0
 DOLOMITE (0.1615%)
 MAL Factor entered against range: '0 to 100' = 0
 2,9 DIMETHYL QUINACRIDONE (0.1267%)
 MAL Factor entered against range: '0 to 100' = 0
 2-HYDROXYETHYL METHACRYLATE (0.07088%)
 MAL Factor entered against range: '0 to 100' = 0
 non-hazardous polymer (0.049%)
 Default assumption [non-volatile] = 0
 BLOCK COPOLYMER (0.04516%)
 Default assumption [non-volatile] = 0
 ALKOXYLATED BUTYL ETHER (0.02981%)
 MAL Factor entered against range: '0 to 100' = 0
 SILICONE CONTAINING ADDITIVE (0.02%)
 Default assumption [non-volatile] = 0
 ALUMINUM HYDROXIDE (0.01925%)
 MAL Factor entered against range: '0 to 100' = 0

proprietary siloxane (0.01382%)
 Default assumption [non-volatile] = 0
 QUARTZ (>10 microns) (0.0135%)
 MAL Factor entered against range: '0 to 100' = 0
 2'-ethoxy-3-hydroxy-2-naphthanilide (0.008715%)
 Default assumption [non-volatile] = 0
 proprietary polyglycol (0.00839%)
 Default assumption [non-volatile] = 0
 COPPER PHTHALOCYANINE (0.006061%)
 MAL Factor entered against range: '0 to 100' = 0
 SILICA (0.0055%)
 MAL Factor entered against range: '0 to 100' = 0
 ALUMINUM SILICATE (0.003991%)
 MAL Factor entered against range: '0 to 100' = 0
 DIMETHYL ADIPATE (0.003939%)
 MAL Factor entered against range: '0 to 100' = 0
 CARBON BLACK (0.00348%)
 MAL Factor entered against range: '0 to 100' = 0
 ZIRCONIUM OXIDE (0.00275%)
 MAL Factor entered against range: '0 to 100' = 0
 TRIMETHYLOLPROPANE (0.002475%)
 MAL Factor entered against range: '0 to 100' = 0
 WATER (0.002232%)
 MAL Factor entered against range: '0 to 100' = 0
 2-Propenoic acid, 2-methyl-, 1,7,7-trimethylbicyclo[2.2.1]hept-2-yl ester, exo- (0.001357%)
 MAL Factor entered against range: '0 to 100' = 0
 dibutyltin dilaurate (0.001026%)
 MAL Factor entered against range: '0 to 100' = 0
 copper phthalocyanine derivative (0.0006682%)
 From US (ACGIH) OELs: Product is assumed to be non-volatile, due to an OEL in mg/m³ being available, and no ppm OEL being available] = 0
 Available value in mg/m³ = 0.2
 Copper, [29H,31H-phthalocyaninato(2-)-N29,N30,N31,N32]-, (1,3-dihydro-1,3-dioxo-2H-isoindol-2-yl)methyl derivs. (0.000594%)
 MAL Factor entered against range: '0 to 100' = 0
 OCTAMETHYLCYCLOTETRASILOXANE (0.00018%)
 MAL Factor entered against range: '0 to 100' = 0
 Decamethylcyclopentasiloxane (0.00018%)
 MAL Factor entered against range: '0 to 100' = 0
 2-tert-butylaminoethyl methacrylate (0.0001131%)
 Default assumption [non-volatile] = 0
 organotin compound (0.000036%)
 From US (ACGIH) OELs: Product is assumed to be non-volatile, due to an OEL in mg/m³ being available, and no ppm OEL being available] = 0
 Available value in mg/m³ = 0.1
 dodecyltrimethylammonium chloride (0.00002747%)
 Default assumption [non-volatile] = 0
 BUTYLATED HYDROXYTOLUENE (0.00001771%)
 MAL Factor entered against range: '0 to 100' = 0
 TIN (0.000000953%)
 From US (ACGIH) OELs: Product is assumed to be non-volatile, due to an OEL in mg/m³ being available, and no ppm OEL being available] = 0
 Available value in mg/m³ = 2
 4-METHOXYPHENOL (0.0000005656%)
 MAL Factor entered against range: '0 to 100' = 0
 POLYCHLOROBIPHENYLS (0.0000006682%)
 From DK (Working Environment Authority) OELs: Product is assumed to be non-volatile, due to an OEL in mg/m³ being available, and no ppm OEL being available]
 = 0
 Available value in mg/m³ = 0.01
 N,N-Dimethyl-1-Aminododecane (0.00000003712%)
 MAL Factor entered against range: '0 to 100' = 0
 Figure-after-dash (Ingredient(s) above the cut-off on their own) = 3
 Ingredients above the Figure-after-dash 3 concentration limit on their own {Denmark MAL Code}
 XYLENES (23.74%)
 Ingredient concentration is above the limit [10%]
 Stricter figure-after-dash numbers that are not available because $\sum [\text{ing conc} / \text{ing limit}] < 1$
 Figure-after-dash 6 calculated ratio: $\sum [\text{ing conc} / \text{ing limit}] = 0.0851045091837$
 QUARTZ (<10 microns): $\text{Ing conc} / \text{Ing limit} = 0.3103 / 10 = 0.03103$
 Minimum value of concentration limit associated with figure-after-dash 6 = 10
 BENZENE: $\text{Ing conc} / \text{Ing limit} = 0.004206 / 0.1 = 0.04206$
 Minimum value of concentration limit associated with figure-after-dash 6 = 0.1
 CARBON BLACK: $\text{Ing conc} / \text{Ing limit} = 0.00348 / 25 = 0.0001392$

Minimum value of concentration limit associated with figure-after-dash 6 = 25
 2-METHOXY-1-PROPYL ACETATE: Ing conc / Ing limit = 0.002165 / 0.2 = 0.01083
 Minimum value of concentration limit associated with figure-after-dash 6 = 0.2
 dibutyltin dilaurate: Ing conc / Ing limit = 0.001026 / 1 = 0.001026
 Minimum value of concentration limit associated with figure-after-dash 6 = 1
 METHYL ALCOHOL: Ing conc / Ing limit = 0.00007926 / 20 = 0.000003963
 Minimum value of concentration limit associated with figure-after-dash 6 = 20
 PROPYLENE OXIDE: Ing conc / Ing limit = 0.00000149 / 0.1 = 0.0000149
 Minimum value of concentration limit associated with figure-after-dash 6 = 0.1
 Figure-after-dash (CLP hazard) = 6
 GHS Status - EU
 Carcinogen - Category 1B - From 'Entered data'
 Entered data - [EU] [9] [Datalink]
 Germ cell mutagenicity - Category 1B - From 'Entered data'
 Entered data - [EU] [9] [Datalink]
 FORMALDEHYDE: Ing conc / Ing limit = 0.00000014 / 1 = 0.00000014
 Minimum value of concentration limit associated with figure-after-dash 6 = 1
 ETHYLENE OXIDE: Ing conc / Ing limit = 0.00000014 / 0.1 = 0.0000014
 Minimum value of concentration limit associated with figure-after-dash 6 = 0.1
 Figure-after-dash (CLP hazard) = 6
 GHS Status - EU
 Carcinogen - Category 1B - From 'Entered data'
 Entered data - [EU] [14] [Datalink]
 Germ cell mutagenicity - Category 1B - From 'Entered data'
 Entered data - [EU] [14] [Datalink]
 Reproductive toxicity
 Calculation intermediates involved in final hazard assignment
 Reproductive toxicity - Fertility - Category 1B - Effect On: Fertility - From 'Entered data'
 Entered data - [EU] [14] [Datalink]
 Reproductive toxicity - Unborn child - Category 2 - Effect On: UnbornChild - From 'Entered data'
 Entered data - [EU] [14] [Datalink]
 1,4-DIOXANE: Ing conc / Ing limit = 0.00000008 / 10 = 0.000000008
 Minimum value of concentration limit associated with figure-after-dash 6 = 10
 METHYL CHLORIDE: Ing conc / Ing limit = 0.00000008 / 0.1 = 0.00000008
 Minimum value of concentration limit associated with figure-after-dash 6 = 0.1
 Figure-after-dash (OEL Criteria - Carcinogen) = 6
 DK OEL: Carcinogen CMR applicable
 POLYCHLOROBIPHENYLS: Ing conc / Ing limit = 0.00000006682 / 0.1 = 0.0000006682
 Minimum value of concentration limit associated with figure-after-dash 6 = 0.1
 Figure-after-dash (OEL Criteria - Carcinogen) = 6
 DK OEL: Carcinogen CMR applicable
 Figure-after-dash 5 calculated ratio: Σ [ing conc / ing limit] = 0.32518807950934
 Reaction mass of Bis(1,2,2,6,6-pentamethyl-4-piperidyl) sebacate and Methyl 1,2,2,6,6-pentamethyl-4-piperidyl sebacate: Ing conc / Ing limit = 0.3 / 1 = 0.3
 Minimum value of concentration limit associated with figure-after-dash 5 = 1
 Figure-after-dash (CLP hazard) = 5
 GHS Status - EU
 Skin sensitization - Category 1A - From 'Entered data'
 Entered data - [EU] [99] [User]
 2-HYDROXYETHYL METHACRYLATE: Ing conc / Ing limit = 0.07088 / 5 = 0.01418
 Minimum value of concentration limit associated with figure-after-dash 5 = 5
 2'-ethoxy-3-hydroxy-2-naphthanilide: Ing conc / Ing limit = 0.008715 / 1 = 0.008715
 Minimum value of concentration limit associated with figure-after-dash 5 = 1
 Figure-after-dash (CLP hazard) = 5
 GHS Status - EU
 Skin sensitization - Category 1B - From 'Entered data'
 Entered data - [EU] [99] [User]
 METHYL METHACRYLATE: Ing conc / Ing limit = 0.002827 / 5 = 0.0005655
 Minimum value of concentration limit associated with figure-after-dash 5 = 5
 2-Propenoic acid, 2-methyl-, 1,7,7-trimethylbicyclo[2.2.1]hept-2-yl ester, exo-: Ing conc / Ing limit = 0.001357 / 5 = 0.0002714
 Minimum value of concentration limit associated with figure-after-dash 5 = 5
 N-BUTYL METHACRYLATE: Ing conc / Ing limit = 0.001344 / 1 = 0.001344
 Minimum value of concentration limit associated with figure-after-dash 5 = 1
 2-tert-butylaminoethyl methacrylate: Ing conc / Ing limit = 0.0001131 / 1 = 0.0001131
 Minimum value of concentration limit associated with figure-after-dash 5 = 1
 Figure-after-dash (CLP hazard) = 5
 GHS Status - EU
 Skin sensitization - Category 1B - From 'Entered data'
 Entered data - [EU] [99] [User]

ISOBUTYL METHACRYLATE: $\ln g \text{ conc} / \ln g \text{ limit} = 0.00001357 / 5 = 0.000002715$
Minimum value of concentration limit associated with figure-after-dash 5 = 5
4-METHOXYPHENOL: $\ln g \text{ conc} / \ln g \text{ limit} = 0.0000005656 / 1 = 0.0000005656$
Minimum value of concentration limit associated with figure-after-dash 5 = 1
Figure-after-dash 4 calculated ratio: $\Sigma [\ln g \text{ conc} / \ln g \text{ limit}] = 0.00002251741012$
ACETIC ACID: $\ln g \text{ conc} / \ln g \text{ limit} = 0.0005611 / 25 = 0.00002244$
Minimum value of concentration limit associated with figure-after-dash 4 = 25
HYDROCHLORIC ACID: $\ln g \text{ conc} / \ln g \text{ limit} = 0.00000019 / 5 = 0.000000038$
Minimum value of concentration limit associated with figure-after-dash 4 = 5
N,N-Dimethyl-1-Aminododecane: $\ln g \text{ conc} / \ln g \text{ limit} = 0.00000003712 / 1 = 0.00000003712$
Minimum value of concentration limit associated with figure-after-dash 4 = 1