



The foundation
of a
good restoration

Impression Trays

Guide to correct
tray selection



GC
FIRST IS QUALITY

Bad impressions are bad for business

Every dentist knows how important it is to take an accurate impression. The right impression material and a good impression-taking technique go a long way to ensuring the best results. But what about the role of the impression tray?

The tray is the foundation of an accurate impression. Using an inappropriate tray can be like trying to take an accurate measurement with a ruler which stretches. You can't do it!

Independent surveys have shown that around half of impressions for crown and bridge work are 'not good enough' to create satisfactory restorations.^{1,2,3}

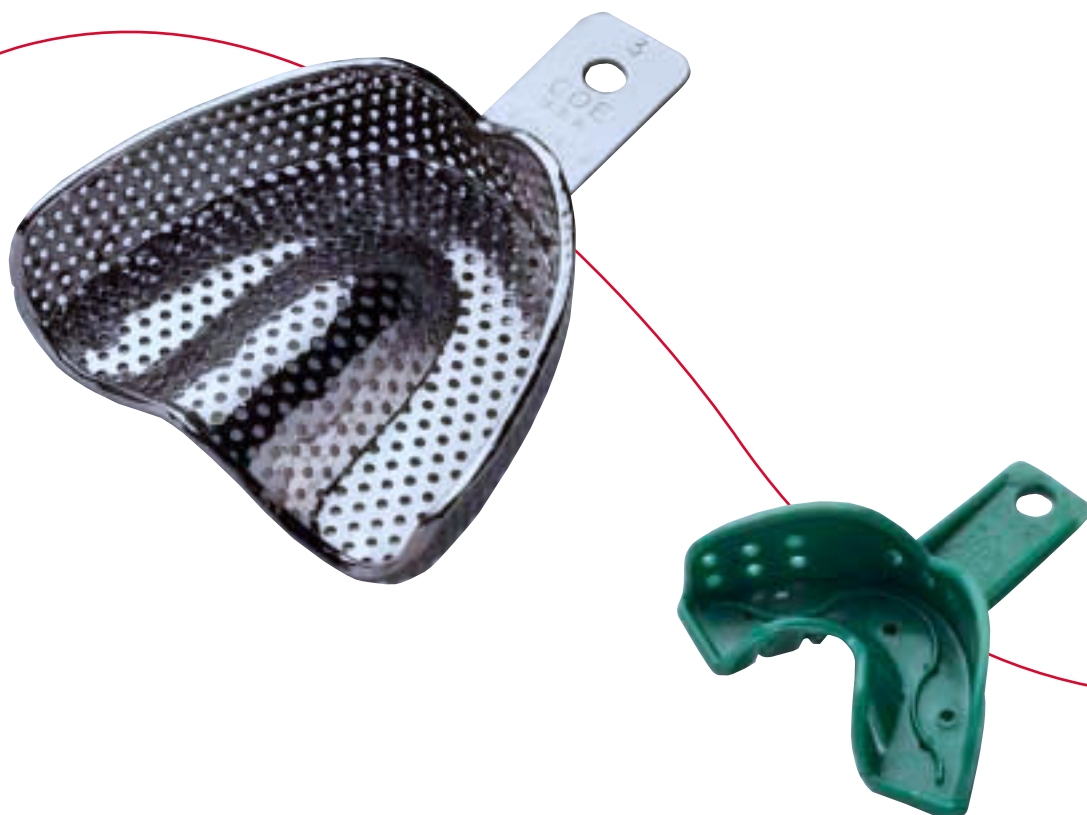
However they occur, restorations that don't fit, or fit poorly, can upset and inconvenience your patients, may cause friction with your laboratory, and waste both practice time and money – a situation a professional, well-run dental business should seek to avoid!

Bad impressions are bad for business

- Extra chair-side time
- Repeat visits for the patient
- Wastes expensive materials
- Remake bill from the laboratory
- Can upset laboratory relationship
- Wastes administration time
- Further patient expense
- Patient distress
- Possible compensation

Given the importance of the tray in achieving accurate impressions, experts have called for more guidance to be given to dentists in correct tray selection.⁶

As one of the world's leading manufacturers of impression trays and materials, GC has prepared this guide to help dentists consider the basis of their own tray selection. After all, making sure that you take the most **accurate** impression possible, **first time**, is not just good dentistry, it's good business!

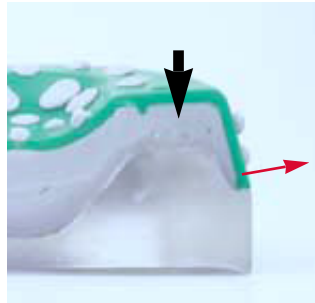


The wrong tray can cause defects in the impression

Looking at the reasons for impression defects, the investigators found that the most interesting factor was the use of **plastic** trays compared to **metal** trays.³

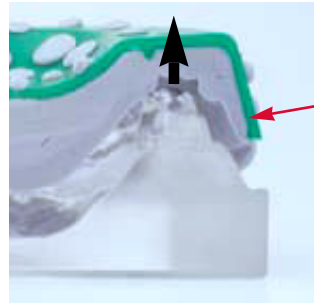
Studies have shown that most disposable plastic trays are **too flexible** to ensure accuracy, particularly when the two-stage putty/wash silicone impression material is used.^{2,3,4}

The procedure requires light-bodied material to be added to the putty silicone, and when this occurs stresses can be induced in the putty. If a stock tray is used which is made of flexible plastic, these stresses can deform the tray.⁴



During seating, high viscous material will expand disposable tray

The critical area for tray stiffness is bucco-lingually (if your plastic trays can be easily flexed with finger pressure in that dimension, the impression putty may also flex the tray during seating). If the tray is deformed it will spring back to a smaller bucco-lingual width when removed from the mouth, resulting in castings which are then too narrow along this dimension.⁵



During removal, tray will spring back excessively

Dimensional distortion of the impression is also more likely when a flexible tray is used, if excessive pressure is applied during impression making.⁴ The space between the teeth and the side walls of the tray is often so great, that a lot of impression material is required to fill it, leading to dimensional shrinkage.⁵



Result: a too small crown

... **flexible plastic trays can be "false economy"**

The fact that plastic trays are cheaper than metal trays is probably one reason for their widespread use, but considering that crown and bridge work is expensive the use of flexible plastic trays can be "false economy".²

GC Stock trays

Keeping in mind the tray selection guidelines detailed previously, there are essentially four aspects of a stock tray to be considered when choosing the most suitable one for a patient/procedure:

1. Accuracy vs. disposability: metal or plastic?

2. Type of impression material: retention features?

3. Type of impression: closed or open-bite design?

4. Type of patient: dentate / edentulous, size and shape?

1. Accuracy vs. disposability: metal or plastic?

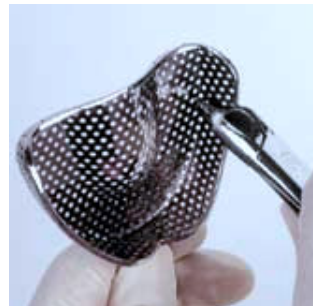
Stock trays from GC currently come in two materials: metal and plastic. Which to choose depends mainly on the degree of accuracy required, the impression material being used and whether or not re-use or disposability is preferred.

Metal trays for when accuracy is the priority

To help ensure the best chances of an accurate impression, the tray must act as an effective barrier or 'dam' against the flow of impression material within the tray. The more effective the barrier the more 'pressure' is created to 'push' the impression material to all areas to be recorded. The more rigid the tray the more effective the barrier and so rigid trays such as metal trays give more accurate impressions than flexible plastic trays.^{1,2,3}



GC Stock trays: choice between stainless steel and coated metal



GC coated metal trays are bendable

Using a metal tray is therefore, particularly important with this type of impression material. Even if using the flexible silicone impression materials, a metal tray is still the ideal compared with plastic trays if a high-degree of accuracy is required.

All GC metal trays have a strong integral handle which helps you to transfer further pressure to the tray and to allow for easy tray placement and removal.

Metal trays from GC have long been the first choice of dental schools and dentists worldwide. They are available in:

- Traditional stainless steel.
- Unique coated metal.

An impression material with poor elastic properties such as alginate, requires the highest possible pressure to 'push' the impression material around the tray.⁶

GC metal trays, especially the perforated coated type are also bendable. This means the borders of the tray can be moulded slightly to suit the patient better, helping to ensure that the impression material flows to all required areas.



GC Stock trays

2. Type of impression material: retention features?

Impression material needs to be held firmly or 'retained' within the tray in order to help prevent the impression material coming away from the tray floor and walls, especially during removal, and to guide the polymerisation and thermal shrinkage toward the tray walls, instead of towards the centre.

Depending on which type of impression material is being used, GC metal and plastic trays are available with various features and combinations of features designed to aid retention.

Perforated or non-perforated (solid) trays

Due to the popularity of double-step impression techniques and elastomeric materials, many plastic and metal trays in use today are perforated. The perforations allow the impression material to expand through the holes and so be held securely in place. Perforated trays are also suitable for alginate materials but not hydrocolloid which needs to be water cooled.⁵

For single impression techniques, such as monophasic polyether, solid metal trays without perforations are required in order to contain the material and to enable sufficient pressure to build up against the tray walls and so hold the material securely in place.

Rimlock trays

For additional retention some metal trays feature a rimlock or 'lip' which protrudes inwards slightly from the top of the tray wall, whilst others also have a rimlock on the base inside the tray. Both perforated and solid trays can have rimlocks, but solid trays are designed specifically for use with alginate.

GC Tray Adhesive

The inside of all trays whether perforated or not, should always be coated with GC Tray Adhesive in order to help prevent 'pull-away' and distortion when removing the tray. Use of a tray adhesive also helps to direct polymerisation and thermal shrinkage toward the tray walls, instead of towards the centre. Ensure the adhesive is allowed to dry before applying the impression material, see instructions for details.



Perforations keep putty materials well in place



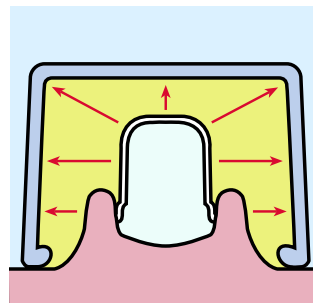
Solid trays are recommended for monophasic materials



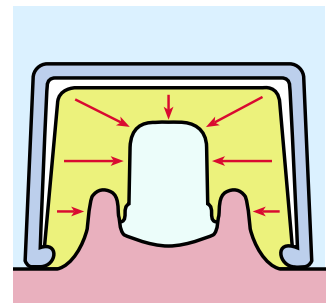
Rimlock for additional retention



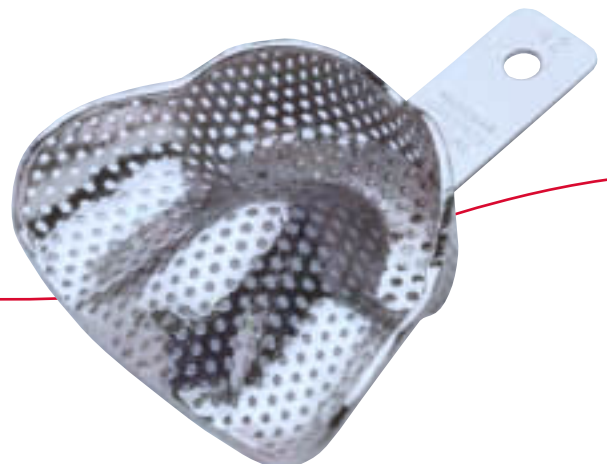
GC Tray Adhesive



← Direction of polymerisation
Optimal retention: well fitting crown



→ Direction of polymerisation
Poor retention: too small crown



GC Stock trays

4. Type of patient: dentate / edentulous, size and shape?

Dentate patients

For dentate patients there are both metal and plastic GC trays to choose from in two designs:

- Full arch trays
- Partial arch trays that cover each of the four quadrants.

There is also a coated metal partial arch 'swivel' tray with a multi-directional handle, designed to take impressions for all temporary crowns.

Edentulous patients

For edentate patients there are coated GC metal trays in three variations:

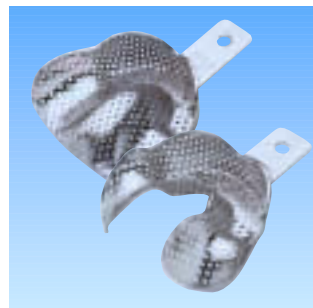
- GC immediate (or McGowan) denture trays
The finest trays for all denture work. They have rimlocks inside and outside the tray for optimum retention.

- GC complete denture trays
All-purpose fit trays that give good results in most cases. They are ideal for dentists who are not specialist prosthodontists.

- GC STO-K trays
For use with alginate impression materials. Their special design guides the alginate to all areas of the tray for optimal reproduction of all anatomical structures and details. To match the patient's anatomical characteristics they are available in tapered, ovoid and square shapes and are made from bendable coated metal.



Selection of GC metal and plastic trays for dentate patients



Selection of GC immediate (or McGowan) trays



GC complete denture trays for edentate patients



GC STO-K trays for edentate patients are available in different shapes



GC Custom trays

Custom trays are first choice for procedures such as denture work and complicated bridge work. GC offers dentists or their laboratories the materials to make custom trays in two different ways:

1. Indirect method: Acrylic resin

GC Ostron 100 is a self-curing acrylic resin in two shades (transparent pink and blue) for making custom trays, base plates and bite registration. It has the following advantages:

- Mixes quickly into a 'doughlike' consistency
- Does not stick to fingers, spatulas or the mixing bowl
- Mouldable after just 30 seconds
- Gives more than 6 minutes working time before setting (via cold polymerisation)
- Easy to trim
- Ample rigidity and strength for impression trays and base plates.
- Gives a smooth and glossy surface after setting



GC Ostron 100 – easy to handle



GC Ostron 100

2. Direct method: 'Impression Separation Wafer' (ISW) technique

This uses a specially designed 'Impression Separation Wafer' together with GC Exaflex Putty and a GC stock tray (preferably rigid metal).

Unlike the indirect method where the laboratory makes the tray, this construction method enables the dentist to make the tray so only one appointment is required. It is also an easy technique to master, so is usually cheaper and quicker to perform.



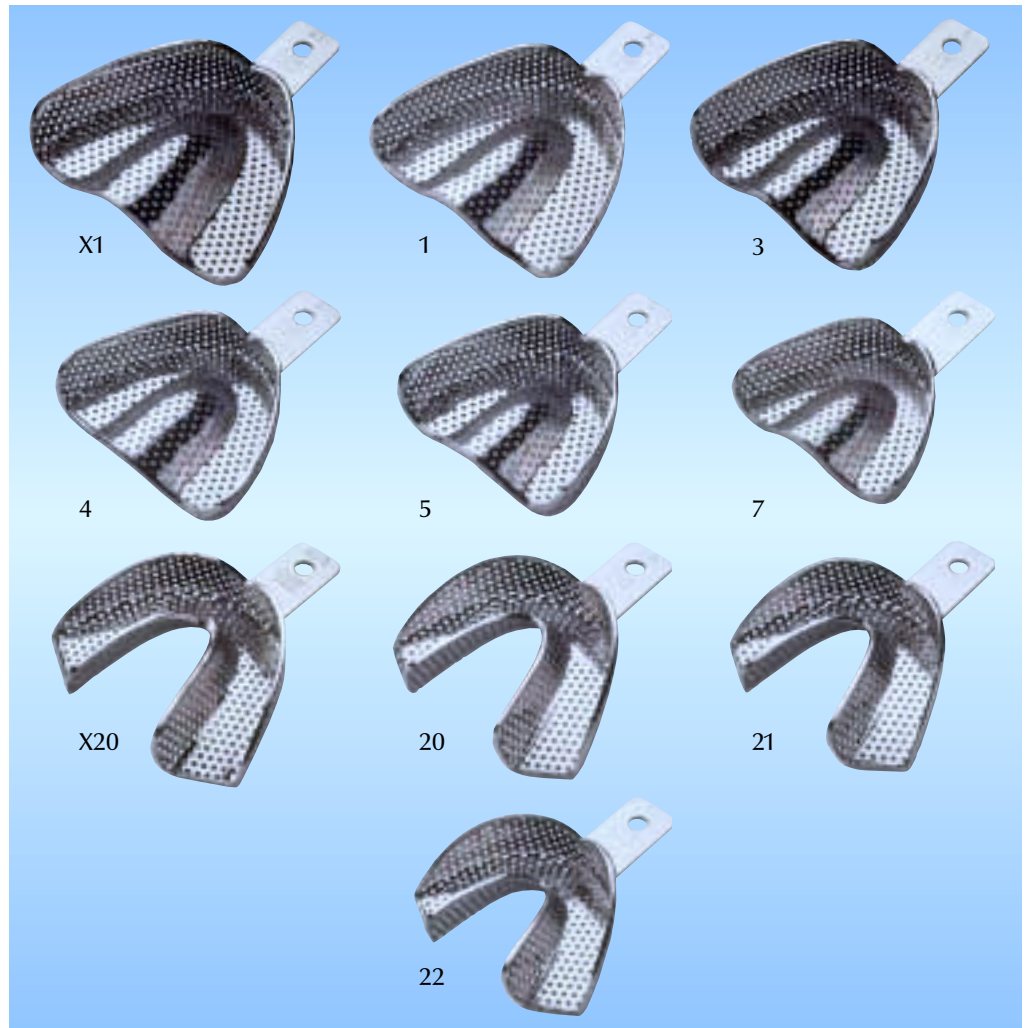
ISW technique enables dentists to make a custom tray at the chair

Open-bite impression Trays

Dentulous Trays Coated Metal

Perforated Regular

- Rigid tray for enhanced accuracy
- Bendable metal so can be moulded for a more individual fit
- Very durable and resistant to sterilization so lasts a long time
- Strong integral handle for secure tray control and removal
- Rimlock borders
- Wide variety of tray types, shapes and sizes to choose from

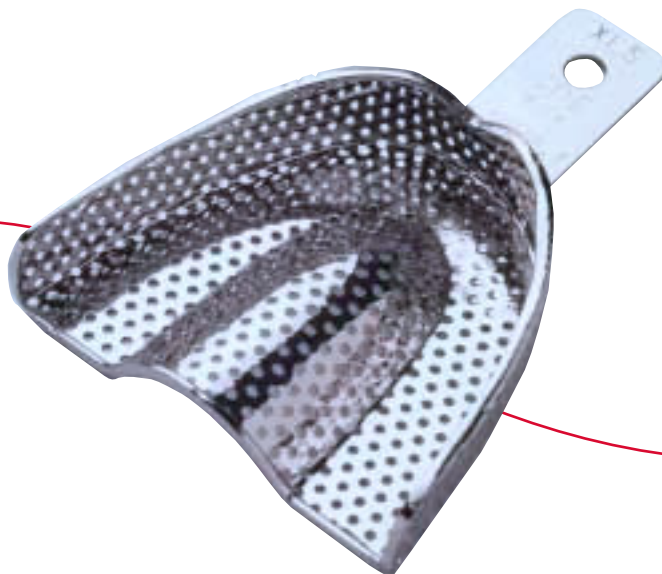
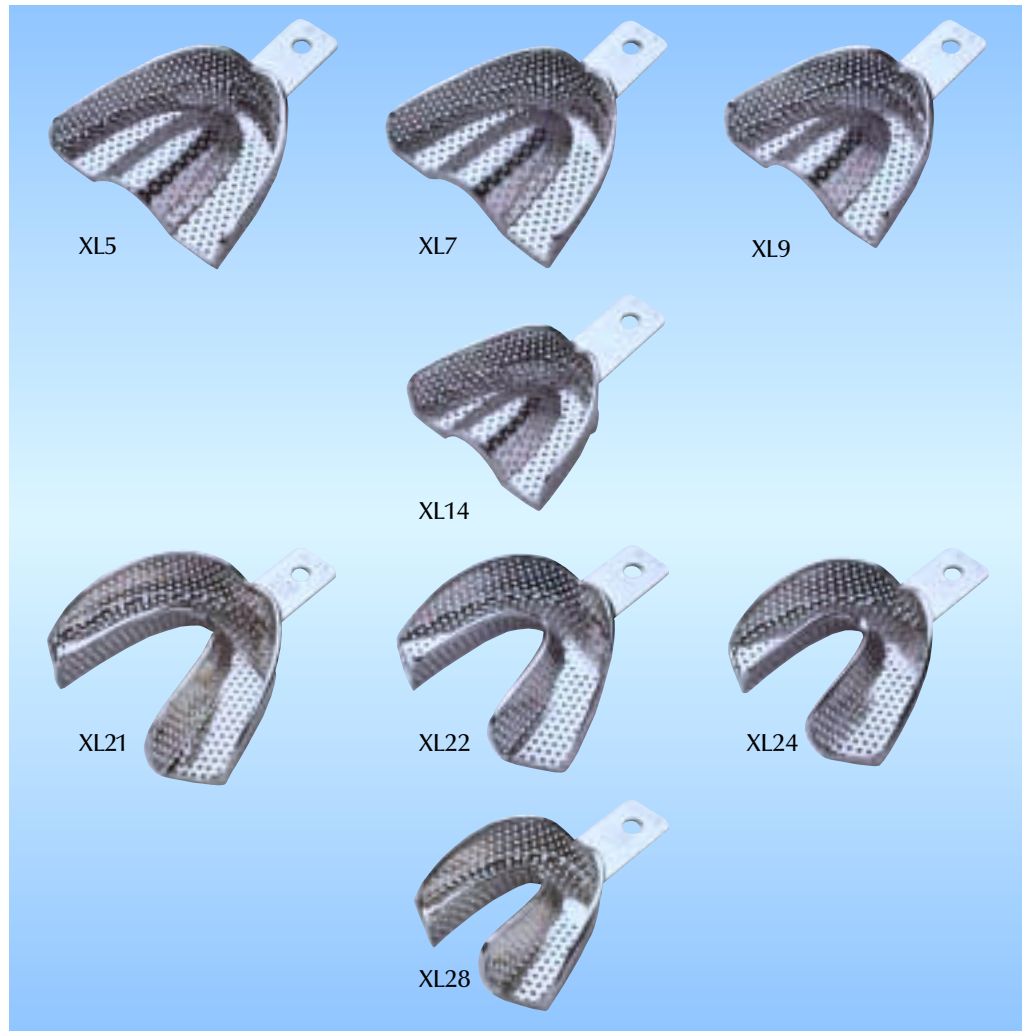


		Width cm	Length cm	Depth cm
Upper sizes				
X1	Extra Large	8,57	6,50	2,22
1	Large	7,62	6,35	2,22
3	Medium Large	7,30	6,35	2,22
4	Medium	7,30	6,03	2,22
5	Medium Narrow	6,66	5,08	1,90
7	Small	6,66	5,08	1,74
Lower sizes				
X20	Extra Large	8,09	6,19	2,22
20	Large	7,62	6,03	1,90
21	Medium	7,62	5,71	2,22
22	Small	7,46	5,39	2,06
Set of 8 trays				
1, 3, 4, 5, 7, 20, 21, 22				

Open-bite impression Trays

Dentulous Trays Coated Metal

Perforated Extra Long



	Width cm	Length cm	Depth cm
Upper sizes			
XL5 Extra Wide, Extra Long	6,98	6,35	1,90
XL7 Extra Wide, Long	6,98	6,03	1,74
XL9 Wide, Long	6,50	5,08	1,58
XL14 Medium Wide, Long	5,87	3,65	2,06
Lower sizes			
XL21 Extra Wide, Extra Long	7,93	6,66	2,06
XL22 Extra Wide, Long	6,98	6,35	2,06
XL24 Wide, Long	6,82	5,71	1,74
XL28 Medium Wide, Long	5,39	5,39	1,58

Set of 8 trays
XL5, XL7, XL9, XL14, XL21, XL22, XL24, XL28

Open-bite impression Trays

Dentulous Trays Coated Metal

**Solid
Regular**



	Width cm	Length cm	Depth cm
Upper sizes			
101 Large	7,62	6,35	2,22
103 Medium Large	7,30	6,35	2,22
104 Medium	7,30	6,03	2,22
105 Medium Narrow	6,66	5,08	1,90
107 Small	6,66	5,08	1,74
109 Smaller	7,30	4,76	1,90
Lower sizes			
120 Large	7,62	6,03	1,90
121 Medium	7,62	5,71	2,22
122 Small	7,46	5,39	2,06
124 Smaller	6,35	4,92	1,90

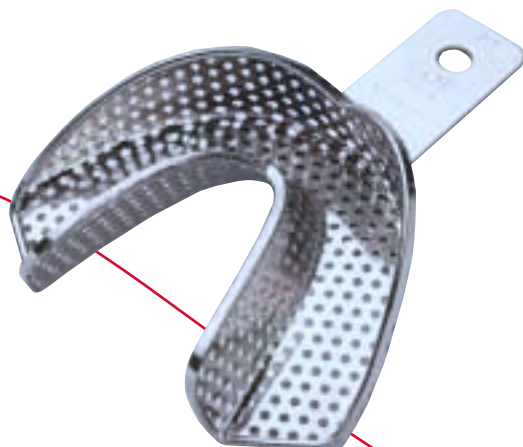
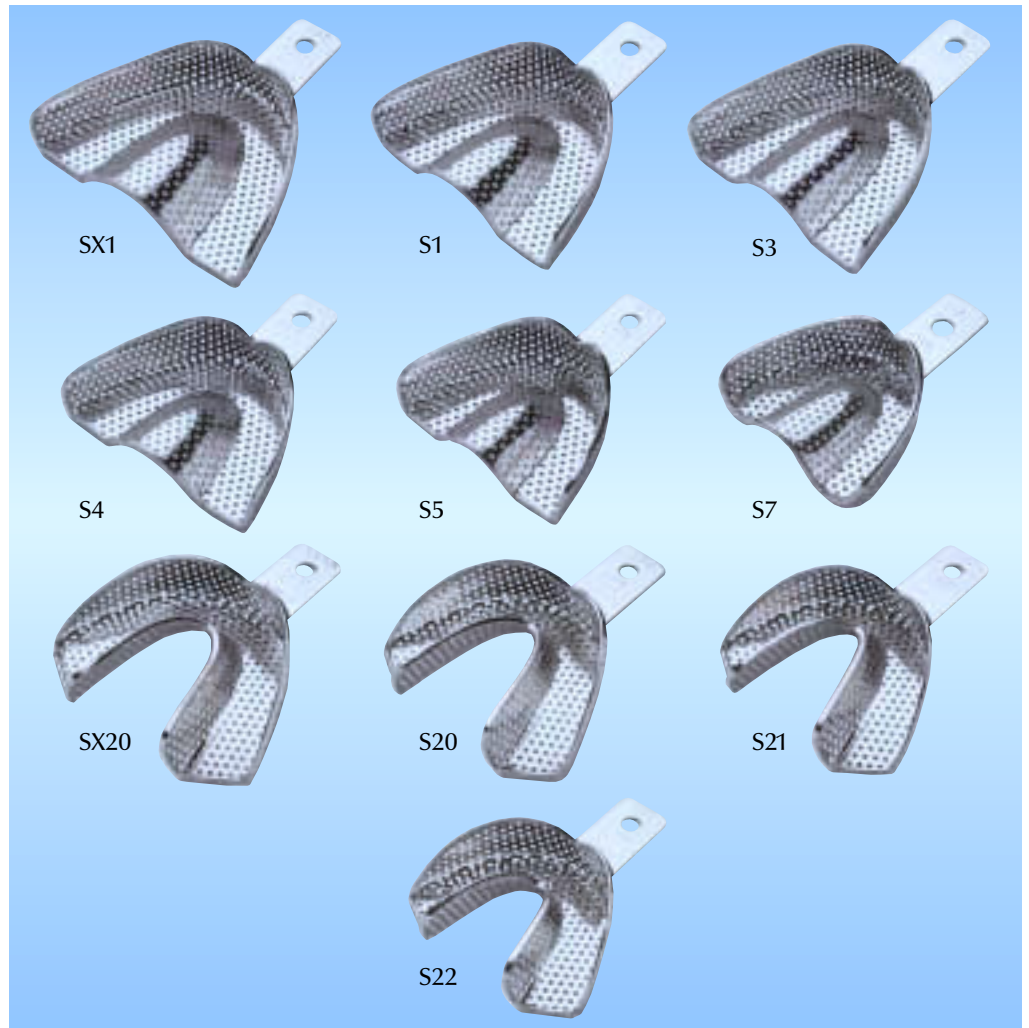
Set of 8 trays
101, 104, 107, 109, 120, 121, 122, 124

Open-bite impression Trays

Dentulous Trays Stainless Steel

Perforated Regular

- Rigid tray for enhanced accuracy
- Very durable and resistant to sterilization so lasts a long time
- Strong integral handle for secure tray control and removal



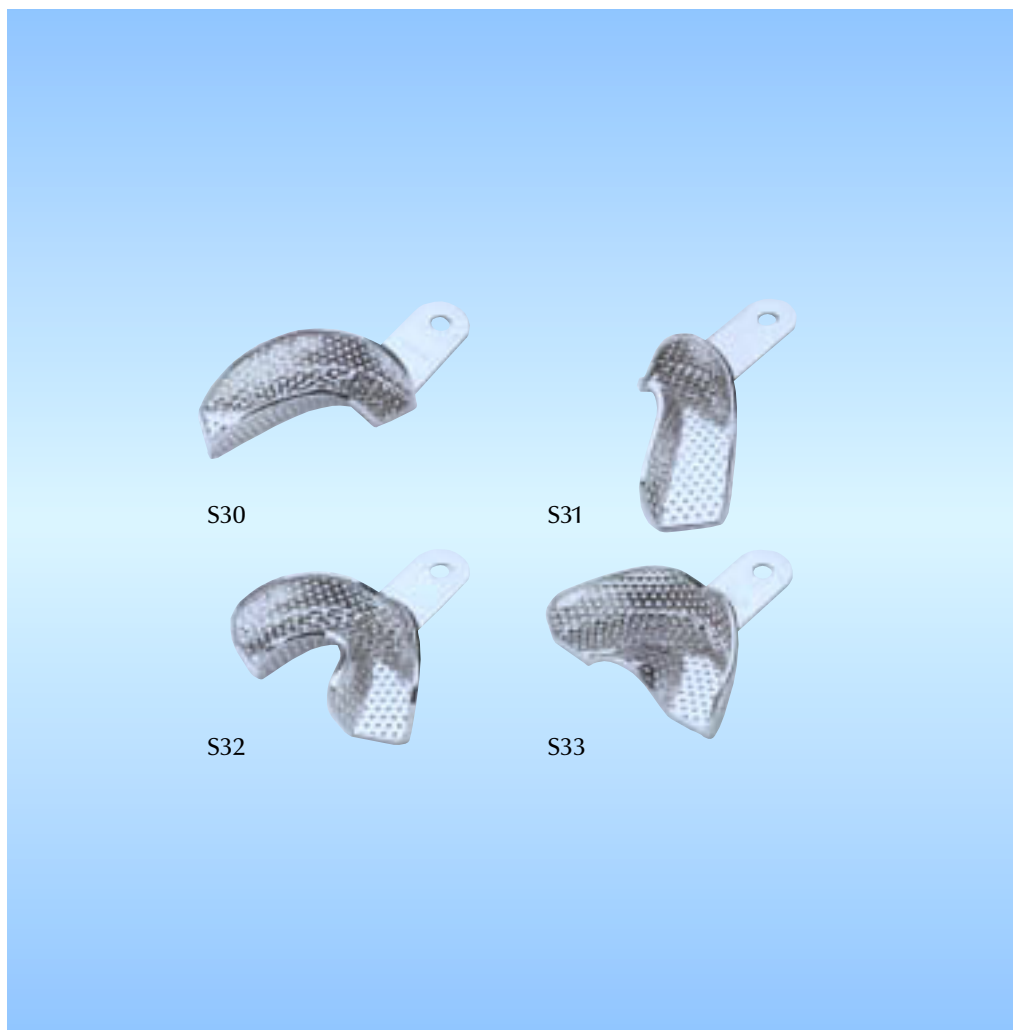
		Width cm	Length cm	Depth cm
Upper sizes				
SX1	Extra Large	8,57	6,50	2,22
S1	Large	7,62	6,35	2,22
S3	Medium Large	7,30	6,35	2,22
S4	Medium	7,30	6,03	2,22
S5	Medium Narrow	6,66	2,00	1,90
S7	Small	6,66	5,08	1,74
Lower sizes				
SX20	Extra Large	8,09	6,19	2,22
S20	Large	7,62	6,03	1,90
S21	Medium	7,62	5,71	2,22
S22	Small	7,46	5,39	2,06

Set of 8 trays
S1, S3, S4, S5, S7, S20, S21, S22

Open-bite impression Trays

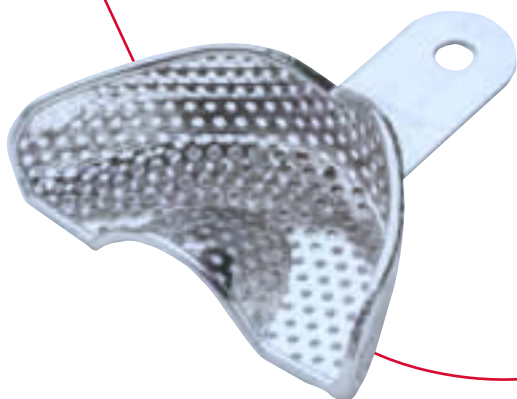
Dentulous Trays Stainless Steel

**Perforated
partial**



		Width cm	Length cm	Depth cm
Sizes				
S30	Upper Left or Lower Right	4,44	6,19	1,90
S31	Upper Right or Lower Left	4,44	6,19	1,90
S32	Anterior Lower	6,35	3,81	2,06
S33	Anterior Upper	6,66	3,65	2,06

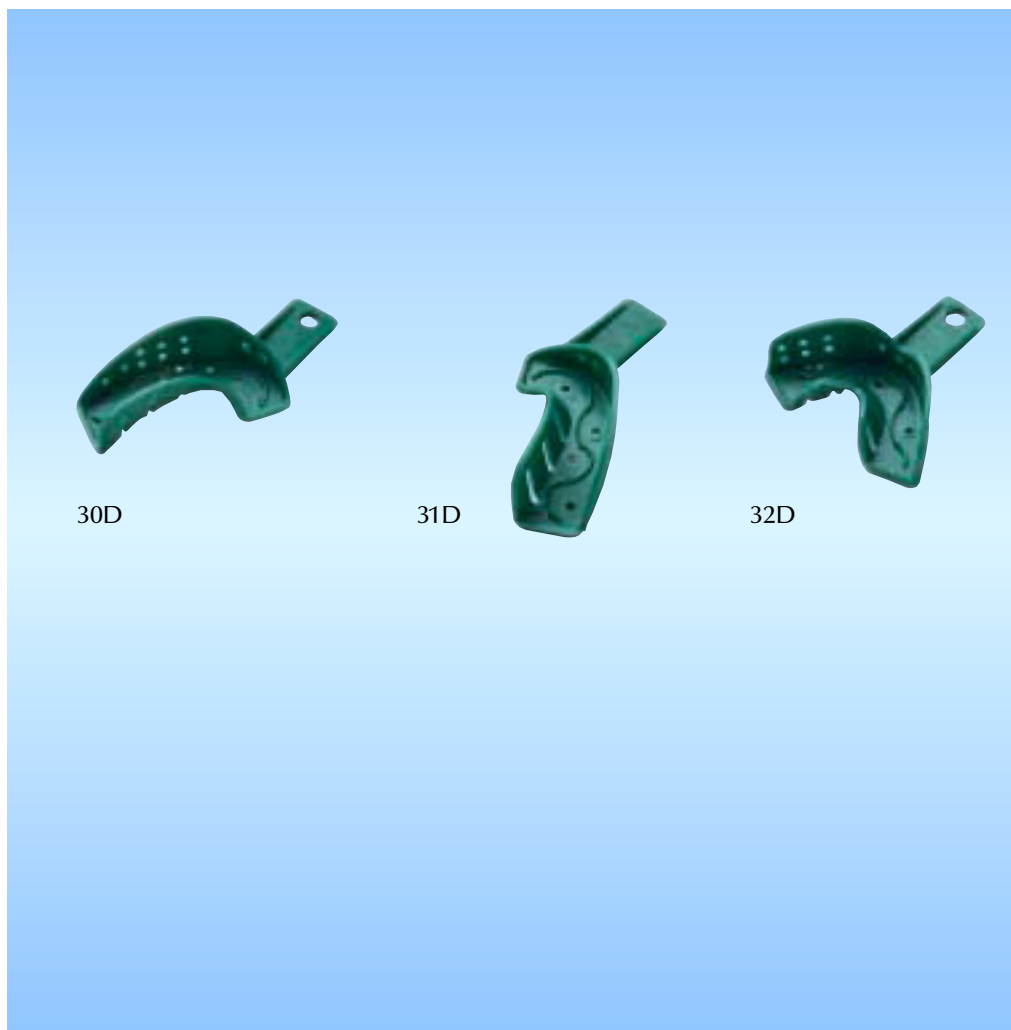
Set of 4 trays
S30, S31, S32, S33



Open-bite impression Trays

Dentulous Trays Plastic Spacer Trays

Perforated Partial

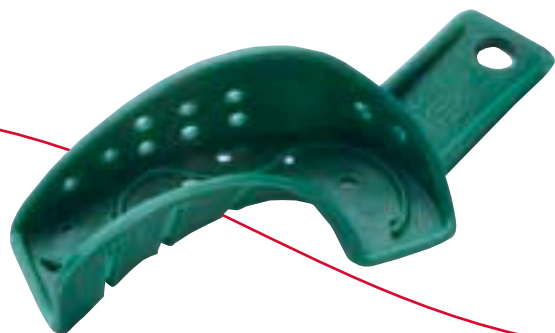


	Width cm	Length cm	Depth cm
Sizes			
30D Upper Left or Lower Right	3,96	5,71	1,90
31D Upper Right or Lower Left	3,96	5,71	1,90
32D Anterior (Upper and Lower)	6,50	3,49	2,06

* 12 Trays bag, one size

* 72 Trays Shelf pack, one size

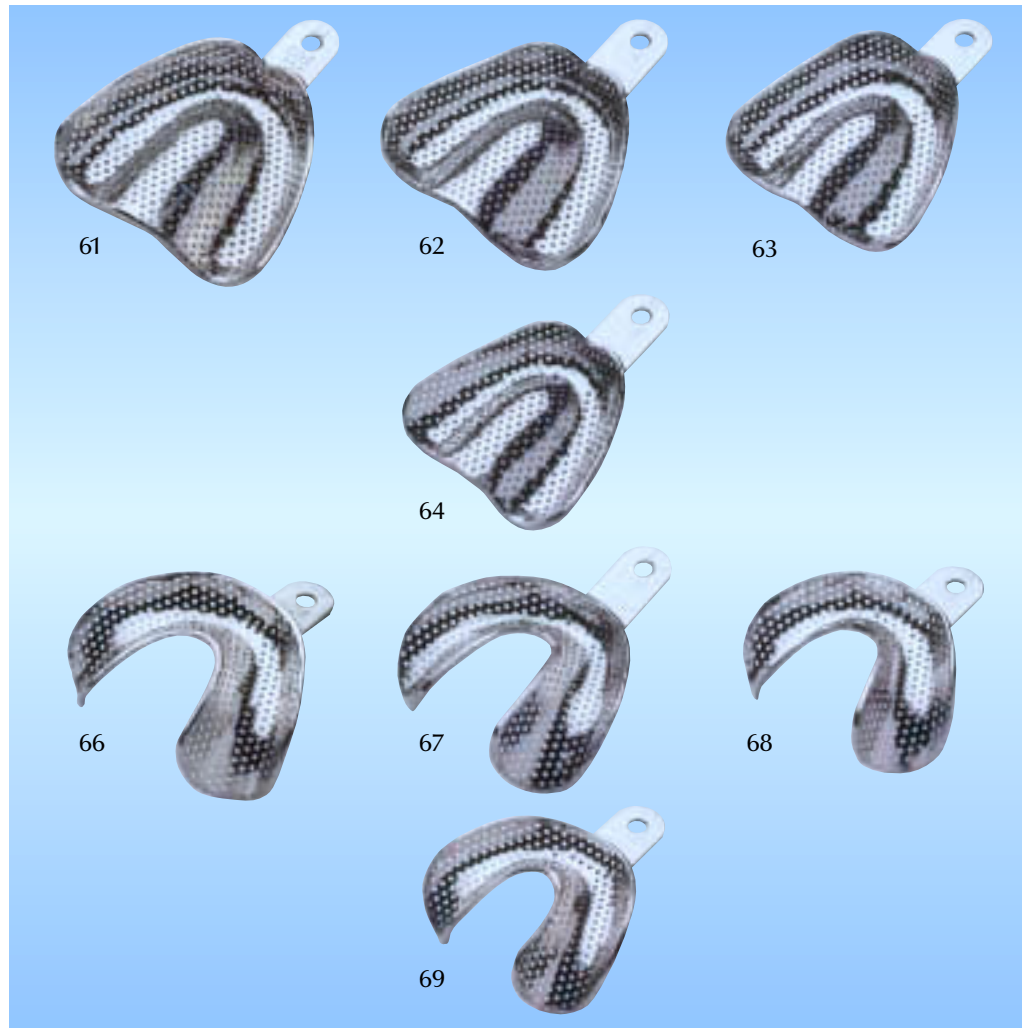
* 432 Trays Master pack, one size



Open-bite impression Trays

Edentulous Trays Coated Metal

Perforated Standard

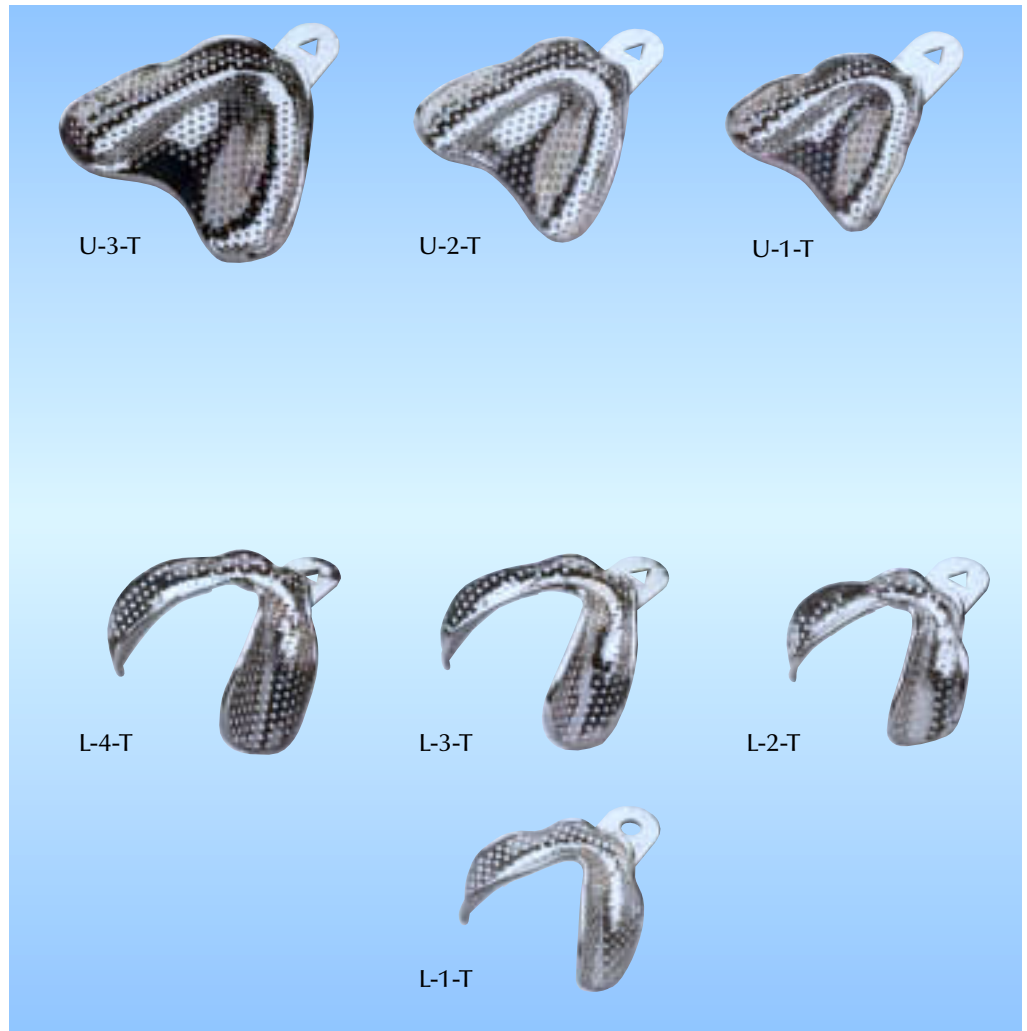


		Width cm	Length cm	Depth cm
Upper sizes				
61	Extra Large	7,93	6,98	1,90
62	Large	7,62	6,66	1,58
63	Medium	6,98	6,66	1,42
64	Small	6,82	6,03	1,27
Lower sizes				
66	Extra Large	8,41	6,35	0,95
67	Medium	6,98	6,35	0,95
68	Large	7,30	6,03	0,95
69	Small	5,39	5,39	1,58
Set of 8 trays				
61, 62, 63, 64, 66, 67, 68, 69				

Open-bite impression Trays

Edentulous Trays Coated Metal

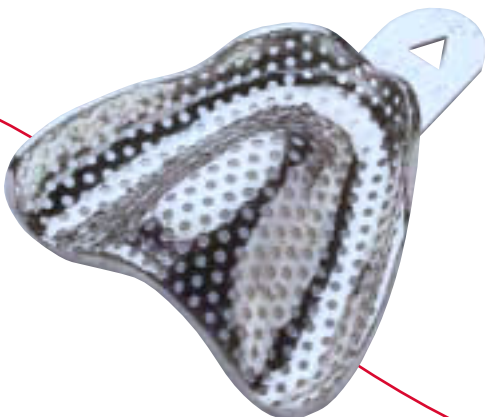
**Perforated
STO-K
Tapered**



	Width cm	Length cm	Depth cm
Upper sizes			
U-3-T Large	7,93	6,82	1,58
U-2-T Medium	6,66	5,71	1,58
U-1-T Small	6,35	5,39	1,42
Lower sizes			
L-4-T Extra Large	7,62	6,03	0,95
L-3-T Large	6,19	6,03	1,27
L-2-T Medium	6,35	5,87	1,27
L-1-T Small	6,03	6,50	0,95

Set of 23 trays

Including all Square, Tapered and Ovoid Perforated STO-K Trays

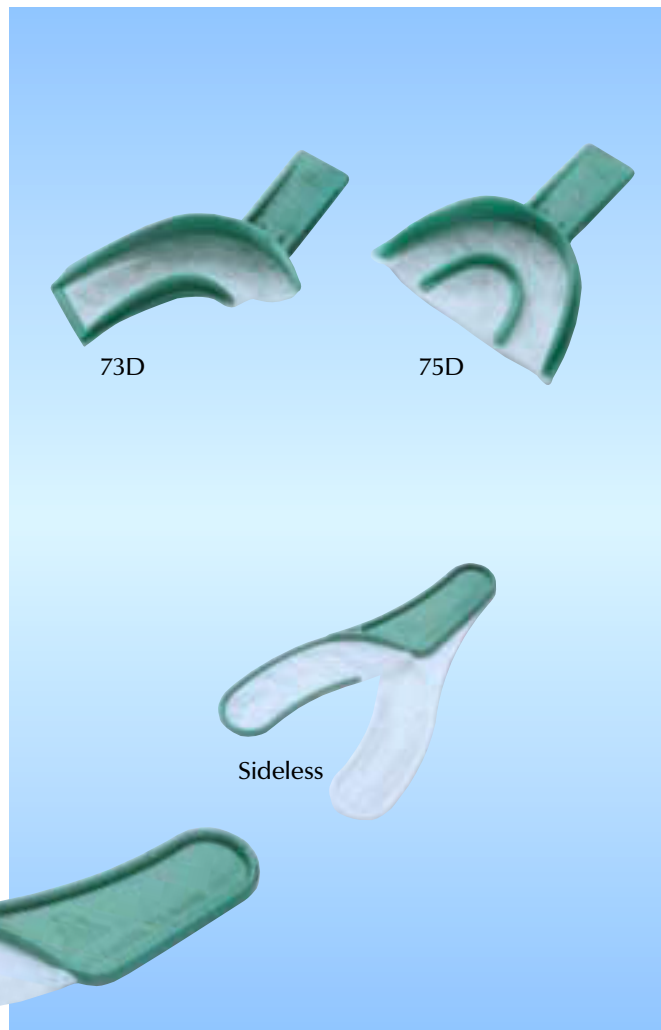


Closed-bite impression Trays

Check-Bite Triple Function Trays

Plastic Trays

- Takes working impression, counter impression and bite registration on one procedure, saving time and money
- Micro-thin, flexible mesh does not impinge on retromolar area, nor interfere with full closure
- Cost-effective enough to be disposable so no clean-up or sterilization hassles
- Strong integral handle and framework for easy tray placement and removal
- Available in anterior and posterior styles for adequate arch coverage regardless of location



Coated Metal Trays

When poured and mounted on the articulator, Check-Bite Double Arch Tray impressions produce a pair of complimentary separable models in true occlusal relationship.

Additional occlusal inserts available (packs of 25)

	Width cm	Length cm	Depth cm
Plastic Check-bite			
73D Posterior style (box of 50)	6,03	5,55	1,90
75D Anterior style (box of 40)	6,66	1,39	1,90
Plastic Sideless			
Box of 50 (25 full arch or 50 quadrants)			
Adjustable : 6,35 to 7,62 cm			
Coated Metal			
Double Arch Tray			
72 Unilateral	1,90	10,16	2,38

References

1. Carrotte P V, Winstanley R B, Green J R. A study of the quality of impressions for anterior crowns received at a commercial laboratory. Br Dent J 1993; 174: 235-240.
2. Winstanley R B, Carrotte P V, Johnson A. The quality of impressions for crowns and bridges received at commercial laboratories. Br Dent J 1997; 183: 209-213.
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6. Carrotte P V, Johnson A, Winstanley R B. The influence of the impression tray on the accuracy of impressions for crown and bridge work –an investigation and review. Br Dent J 1998; 185: 580-585.

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Overview

Open-bite DENTULOUS trays

Perforated Coated Metal Regular	Perforated Coated Metal Paedodontic	Perforated Coated Metal Extra Long	Solid Coated Metal Regular	Perforated Stainless Steel Regular	Solid Stainless Steel Regular	Perforated Plastic Spacer Trays	Description
Upper	Upper	Upper	Upper	Upper	Upper	Upper	
X1				SX1			Extra Large
1			101	S1	S101	1D	Large
3			103	S3	S103		Medium Large
4			104	S4	S104	4D	Medium
5		XL5 ●	105	S5	S105		Medium Narrow (● extra wide, extra long)
	7	XL7 ●	107	S7	S107	7D	Small (● extra wide, long)
	9	XL9 ●	109				Smaller (● wide long)
	14	XL14 ●					Extra Small (● medium wide, long)
Lower	Lower	Lower	Lower	Lower	Lower	Lower	
X20				SX20			Extra large
20			120	S20	S120	20D	Large
21		XL21 ●	121	S21	S121	21D	Medium (● extra wide, extra long)
	22	XL22 ●	122	S22	S122	22D	Small (● extra wide, long)
	24	XL24 ●	124				Smaller (● wide, long)
	28	XL28 ●					Extra Small (● medium wide, long)
Partial			Partial	Partial		Partial	
30			130	S30		30D	Upper Left or Lower Right
31			131	S31		31D	Upper Right or Lower Left
32			132	S32		32D ●	Anterior Lower (● Upper & Lower)
33			133	S33			Anterior Upper
99			199				Swivel (Upper & Lower)

Open-bite IMMEDIATE and EDENTULOUS trays

Immediate Perforated Coated Metal McGowan	Edentulous Perforated Coated Metal Standard	Edentulous Perforated Coated Metal STO-K Square	Edentulous Perforated Coated Metal STO-K Tapered	Edentulous Perforated Coated Metal STO-K Ovoid	Description
Upper	Upper	Upper	Upper	Upper	
40	61				Extra Large
41	62	U-3-S	U-3-T	U-4-0	Large
42	63	U-2-S	U-2-T	U-3-0	Medium
43	64	U-1-S	U-1-T	U-2-0	Small
44				U-1-0	Extra Small
Lower	Lower	Lower	Lower	Lower	
45	66	L-5-S	L-4-T		Extra Large
46	67	L-4-S	L-3-T	L-4-0	Large
47	68	L-3-S	L-2-T	L-3-0	Medium
48	69	L-2-S	L-1-T	L-2-0	Small
		L-1-S		L-1-0	Extra Small

Closed-bite CHECK-BITE TRIPLE FUNCTION trays

Double Arch Tray Coated Metal	Check-Bite Plastic	Sideless Plastic
72 Unilateral	73D Anterior 73D Posterior	Adjustable